AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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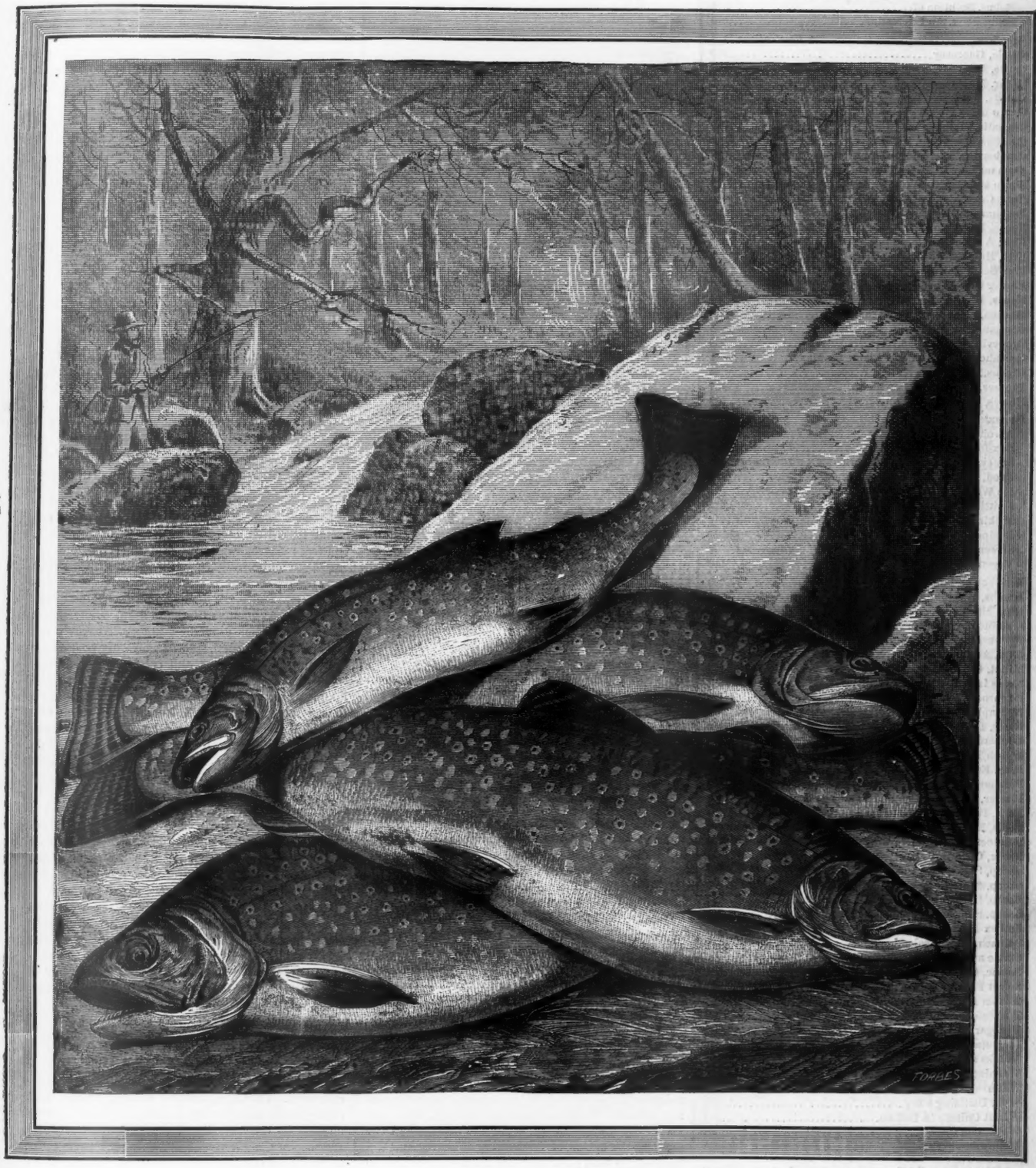

A RICH "FIND" IN A MOUNTAIN (MAY) POOL.

Drawn and Engraved for the American Agriculturist.

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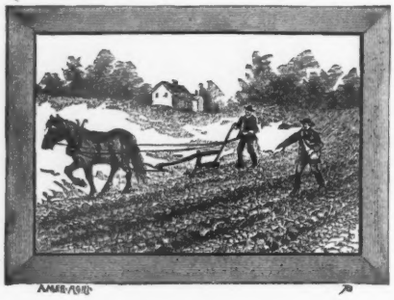
See pages 217 and onward for other Reading Matter, Sundry Humbugs, Business Announcements, etc., etc., etc.

May.

Welcome every bright-winged song bird,
Heralding the dawn of day;
Every bud, and leaf, and blossom,
Welcome all sweet flowers of May.

FARM AND GARDEN WORK FOR



MAY.

May is the month of blossoms, of promise, of hope, of seed-time. What the future has in store we do not know, except that the harvest "shall not fail," at least not the world over. Single crops may go amiss. Drouths may and will come, some whole sections may suffer, but we will plan and work, cheered by the hope of a bountiful return, gladdened by the rain and by the sunshine, thankful that labor well applied earns its reward from the willing earth. The sentence passed by the All-wise Judge, "By the sweat of thy brow shalt thou eat bread," may seem severe to the lover of ease. Had it been given as a panacea for all the ills which

All readers turn immediately to page 226 for matters of special interest.

afflict mankind it might have been differently regarded, but none the less a blessing. This reward of labor we are too apt to overlook. Health, as the highest award of toil, is ours; pecuniary profits may foot up more or less, but with seasonable care not to overwork or overstrain, not to overtax endurance of mind or body, to take time to rest, to provide plain, well cooked food, and reasonable relaxation, being temperate in all things, we can afford to be contented with very moderate pecuniary gains. The coming on of warm weather is often trying to strong constitutions. Moderation is desirable. We take care not to overtax our teams, why should we take less care for ourselves?

Manure "makes" very fast this month. All sorts of rubbish raked and scraped from feeding yards, chip dirt, bark, etc. half decayed leaves from fence corners, and sod trimmings from road-ways and walks, or from around the fruit trees, composted with fresh manure will quickly heat, and the entire mass, after once or twice working over, will be admirable for late crops of corn, corn-fodder and millet, or for top dressing mowing land as soon as the grass is off. May is the month in which tillage of the surface by the harrow and cultivator, tells more to the advantage of the soil and crops than at any other. Weed seeds start quickly, and crop after crop may be killed, while the moisture of the soil and the action of fermenting manures and the heat of the sun, all contribute to those changes in the soil which augment the supply of plant food, and all these are greatly aided by stirring, mellowing and comminuting of the surface of the ground.

Live Stock Notes.

May is a critical month with farm animals. They are, over a great part of the country, going "from hay to grass," and are liable to be affected by the debilitating influence of the succulent and loosening feed. The only way to prevent evil effects is to give hay and grain at morning and evening at first, continuing the morning ration of hay longer than that of the evening, until the grass gradually gains in nutritive value and the animals become accustomed to it. This is equally important for horses, cows and sheep. Horses that are not put to hard work are not usually harmed by grass; the "clearing out" does them good. Brood-mares, however, need more substantial feed. Work horses, or oxen, should also have hay daily, but if the hay is low, and due consideration for the future prevents buying, they must have grain, which is best fed ground and sprinkled upon chopped straw. Fresh cows generally do very well if they calve within a month after being turned to grass. There will be little fear of milk fever or of any trouble incident to a feverish condition, but large milkers will need feed the second week or they will run down thin.

Orchard and Fruit Garden.

Those who change their place of residence usually do so this month, and such, whether they move to a village lot or to a larger place, wish to improve it by setting out fruit-bearing trees and shrubs. It is a common mistake to undertake too much. An owner of a small place can not afford to grow apples, which he can buy for a small outlay, while he can by growing strawberries and other small fruits, have these in greater perfection than they can be purchased. Persons who begin their operations, whether on a small or a large scale, should avoid those who advertise trees or shrubs "for immediate bearing." We know of no tree or fruit-bearing plant that will, or ought to bear fruit, the same season in which it is planted. In planting trees so late, it is the more important to shorten the branches. Nurserymen send a showy top without regard to the size of the roots; it is safe to cut off at least half of each branch before planting. Old trees may be grafted if cions are to be had.... Insects must be fought from the start. If the eggs have not been cut off and destroyed, the Tent-caterpillars will pitch their tents in the forks of the branches. As soon as these are seen, remove them by hand, whether gloved or not.... Wherever the curculio has invaded, plums can only be had by daily jarring the trees and catching the insects upon cloths spread for the purpose. This should begin as soon as the fruit is set.... Borers are often in trees received from the nursery, and each one should be examined as planted. Wherever sawdust is seen at the base of a young tree, a borer is at work, and must be cut or probed out.... If strawberry beds are not already mulched, apply a covering of straw, after a thorough weeding, to keep the fruit clean..... Blight, which so mysteriously attacks pear trees, is as fatal as ever. Wherever it appears, cut away the affected branch or the whole tree, and burn it.... Frequent inquiries come about planting in orchards. The trees of a bearing orchard should have the whole ground, but a young orchard may be cropped between the rows, with benefit to the trees. Potatoes or other crops that require manuring and cultivation are the best ... Currants may have their season much prolonged by heavy mulching.... Grape-vines planted this spring should bear but a single shoot, which should be kept carefully trained to a stake.

Kitchen and Market Garden.

Tenants usually take possession this month, and though it seems late, they should not be discouraged. Cabbage, tomato, celery, pepper, and other plants can be bought, and this month is early enough for the majority of vegetables grown from seeds. Sow a plenty of spinach and beets; the thinnings of the latter to be used as greens. Also an abundance of peas. If brush is not at hand, sow the dwarf kinds. Do not forget the melons, sugar corn, and a row of pop-corn for the children.

Flower Garden and Lawn.

If there are thin places in the lawn, scratch the surface with a sharp rake, and sow grass seed and roll or beat down with the hoe....Provide climbers for the veranda, and to cover fences, etc. Morning glories and other annuals make a show very quickly. In making beds in the lawn, do not over do it. A single bed in a small lawn is enough. This may be filled with Coleus, or, if flowers are desired, Drummond's Phlox, Portulacas, or Petunias, for which see last month.

Greenhouse and Window Plants.

In every collection there are over-grown plants, such as geraniums, etc.; the best use to make of these is, to turn them out into the border and let them do as they will, taking cuttings for the next winter. Plants that it is desired to keep, should be set in partial shade, and watered as needed.

Bee Notes for May.

L. C. ROOT, MOHAWK, N. Y.

This month is really the commencement of the bee-keeping year in northern localities. We can not have our bees well established earlier, and know how many stocks will be in good condition for the season's operations. The inexperienced purchase bees in the fall, or too early in the spring, which is to the advantage of the seller, but seldom

VEIL AND SMOKER.

so to the buyer. I would advise the beginner never to purchase bees before May, and if the spring is cold and backward, it would be preferable to wait until June, or until the weather is well settled and warm, a rule which applies to all latitudes. The cold spring months is the critical time for even the most experienced bee-keepers. I would also suggest to beginners, that as a rule, it is better to start in bee-keeping the year directly following a season which has been poor for bees, than after one of the very best. One and often two good seasons are almost sure to follow a poor one. Beginners, in deciding whether to commence bee-keeping, are apt to be governed by the success or failure of others. If those who understand it, fail to secure good results, others are not encouraged to commence the following season. If they notice the success of the experienced for one or two consecutive years, they are induced to invest, and usually do so at such a time, as the poor season may reasonably be anticipated. It is quite apt to be the case, that every third season will be comparatively unremunerative. To commence at such a time often entirely discourages the beginner. In beginning immediately after it, two reasonably good seasons may usually be expected, by which time some experience may be acquired, which will enable one to more successfully meet the embarrassments of the deficient one. I would advise beginning always in a moderate way. It is never well to engage in any new business too largely at the start, and this is particularly true of bee-keeping. Purchase the first stock of bees of some one who will be sure to give you the benefit of his experience in selecting a good one. The bees should be in a good movable frame hive. Avoid the expense of extra fixtures, until you find what you can make available in your particular location. Usually about two extra hives for increase of stocks, with sufficient boxes for them, is all that is needed at first, except a smoker and veil.

Washington Territory for Women.

Christian Tuttle, Whatcom Co., W. T., writes us: "I should say on a general estimate, that there are more than twelve thousand bachelors in this Territory. I can count eight holding claims on this small island (Lummi), where I reside, and there are as many more at work in the logging camp. In fact, the woods are full of them. If these men all had wives, I should experience no difficulty in securing a large club for the *American Agriculturist*. I regret to say that it will not prosper under the bachelor regime. These bachelors take a claim, work it for a time, then when there is some mining excitement near or far away, they leave everything perhaps, and never return. I know how this is, for I have resided on this western coast for thirty-seven years, and during thirty-one of them I was a bachelor. You will therefore state that Washington Territory is a good place for enterprising women to emigrate to. Here they can vote, hold office, and enjoy the left-hand privilege of serving as jurors. If enough women would only come out here to mate all the bachelors, the *American Agriculturist* would have an immense circulation here."

EDITORIAL COMMENTS.

The Editors will be very glad if they can assist Mr. Tuttle in the philanthropic work upon which he has entered. We are constantly in receipt of communications from substantial citizens in Washington Territory, asking us to aid them in a matrimonial way. One in Walla Walla, not long ago considerately enclosed five dollars in his letter, on the principle that he could not expect us to work for nothing. The Editor having the matter in charge, was compelled to express his inability to "send on a wife," inasmuch as he, had as yet found no time to secure one for himself. However, we have to say to our Walla Walla friend, and to our other subscribers in Washington Territory, that we shall take great pleasure in keeping the attractions of their region before our women readers. We know of many splendid women who have gone to the western coast as teachers, and in other capacities, who now have lovely homes, and growing families.

The *American Agriculturist* does not as yet propose to go into the matrimonial agency business, but we shall always take great pleasure in urging ladies of character, constitution and education, to push for Washington Territory and other regions in the far West, where refined, honest women are required to soften, ameliorate, and give right tendencies to the civilization of the country. We shall be glad to hear from other subscribers, not only in Washington, but in Oregon, Wyoming, Montana, and indeed, the far West generally. There is no reason why the splendid women of New England and the Middle States should remain East, while their sturdy brothers push for the far West.

Weaning Lambs.

THOMAS STEPHEN POWERS.

If lambs are thriving as well as they ought, they need not run with the ewes above four months. They will be more quiet if left in the field they are used to, and the ewes put out of sight and hearing.

If there are shade and water in the field which they know where to find, they will help themselves. If not, they ought to be driven to water every day; and it is a good plan to fetch them to the stable before the sun gets very hot, to prevent them from rambling aimlessly about the field, panting in the sunshine, or crowding into the fence-corners.

The lambs should have a fresh rowen or an upland pasture, if one is available, well stocked with June grass, Red-top, or some short, tender, nutritious grass. There should be strips of forest in it, with shady knolls for stamping-grounds, where they may find an abundance of dust which is so essential to their health during the dog days. An old ewe should be left with them for a flock-leader. If they are accustomed during the summer to a stationary salt-trough, the task of teaching them to eat feed will be reduced to a trifle, as they will approach the troughs freely. A mere dusting of salt should be sprinkled on their feed for a few days (being withheld from them otherwise); after that it may be left in quantity in the trough appropriated to it, or sprinkled on a clean sod. It is of the highest importance that lambs and yearlings should have daily access to salt, summer and winter, at least in a humid climate.

For a safe, nutritious, healthy, universally available and everywhere procurable feed for weaned lambs, there is nothing which is comparable to wheat bran. I find it profitable to enrich it by the addition of a little shorts or oil-cake meal.

How Spawn is Taken From Fish.

SETH GREEN.

Many people have the impression that the fish must be cut open in order to obtain its spawn, but such is not the case. When the spawn is taken from the female fish to be vitalized with the milt of the male, both parents must be alive and in a healthy condition or else good results cannot be obtained. On one occasion we took the spawn from a ripe female three hours after she was supposed to be dead, and impregnated it by using a live male. After they had developed sufficiently to ascertain, fifteen per cent were found impregnated, but it is doubtful if every spark of life had departed from the female, as the blood will often circulate long after a fish has ceased to show any signs of life.

After the fish are captured from the spawning races, into which they have run in anticipation of casting their spawn in the natural way, they are placed in a tub of water and the ripe females selected. Experience is about the only thing which will tell you with certainty when the female is in perfect condition for operating upon. The eggs must be perfectly mature and ready to come from the fish just as nature intended they should. If they are pressed from the fish prematurely, your efforts will be wasted, as they cannot be fertilized. The ripe female can be told by the touch, to the expert. When in perfect condition the belly of the fish feels soft and flabby, and if she were held up by the head her spawn would settle downward, while with the unripe female the spawn remains stationary in place, and feels to the touch hard and bunchy, like shot. When all is in readiness the fish is taken by the head with the right and by the lower part of the body by the left hand, and held over the pan with the belly as near the bottom as possible. The fish will struggle quite violently at first; it is many times necessary to place it back in the tub for a moment and commence again. When the fish gets quiet, the right hand is gently slipped down from the upper part of the body, and the forefinger used to press the belly, the hold on the tail or lower part of the fish being retained. If the fish is a large one it is often necessary for the operator to have an assistant to hold its head, as it would be very difficult for one person both to hold and take the eggs without injuring the fish.

If the fish are handled too roughly it will break the slime which covers the body of the fish, and in that case a fungus growth appears upon them, and the result is almost invariably death. In a few instances they have been cured by immersing them several times in a strong salt and water bath until they turn over, and then placing them immediately in fresh water, but this is rarely effectual. The pan is slightly elevated on one side by placing a small block under it about an inch in thickness; this is so that the spawn and milt will occupy less space. The bottom of the pan is moistened by dipping it into water and immediately pouring it out. This is all the water that should be used, aside from what would naturally drip from the fish. The impregnation takes place instantaneously.

After the spawn and milt have been taken, they should be jostled about in the pan for a short time so as to thoroughly mix. More water is then added, when the eggs adhere to each other and to the side of the pan. The spawn is then set in a hatching trough where the water is flowing, and often in the duration of twenty to thirty minutes it loosens up and separates. It is then washed in several waters, and is placed on the hatching trays.

Walks and Talks on the Farm.

New Series.—No. 20.

JOSEPH HARRIS.

At present prices, we ought not to export, unless from the Pacific coast, a bushel of wheat to Europe. What is the good? The farmers who raise the wheat, work for nothing and board themselves. The railroads who carry it, carry it at a loss, and try to make up the deficiency by charging exorbitant rates on local traffic and travel, or by selling land. The millers say they lose money on flour, and consequently charge more for mill-feed.

"But what shall we do with our surplus wheat?" In the first place, the surplus, leaving out the Pacific coast, is far less than is generally supposed. According to the figures of the English Board of Trade, the total imports of wheat from the United States into Great Britain last year was 45,320,180 bushels. Of this, 26,334,024 bushels were from the Pacific Coast, and 18,986,156 bushels from the Atlantic Coast. The price we get for this nineteen million bushels of wheat in England determines the price of our wheat crop. If we eat five bushels of wheat to an inhabitant, how much more should we have to eat to use up this nineteen million bushels? We are a great nation of fifty-five million people. If we should each eat half a bushel more wheat per annum, these nineteen millions would be gone, and we should be calling for more—and then we should have to pay, not what our wheat is worth in Europe, less expenses, but what it is worth in Europe, plus expense of getting it here. That is what I want to see. It would be better for farmers and consumers alike—for when farmers do well, all the great industries of the country prosper.

"But we cannot eat half a bushel more wheat." Well, then, give it to the hens. They will eat it, and we will eat the eggs. They will lay more eggs when fed wheat, than when fed corn—and if they do not, we will eat up the hens. Seriously, there is a good and growing demand for meat of all kinds, and while good grass is unquestionably the cheapest food for producing beef and mutton, yet our cattle and sheep would be none the worse for a little more grain, especially in the winter months.

"The destruction of the poor is their poverty." Many of us are compelled to sell our grain for whatever it will bring, though we know at the same time that we could use it to better advantage on the farm. It would bring in more money if converted into beef, mutton, veal, cheese and butter, and at the same time enrich our farms. But we think we cannot afford to wait. In some cases this is true; but there are farmers enough, ten times over, who are sufficiently forehanded to feed cattle and sheep to such an extent, that our small surplus of grain would disappear in a few months. All they want is faith in the profitableness of the plan. We are rapidly improving the general character of our farm animals by the introduction of good breeds, but it should never be forgotten that improved breeds require improved feeding.

"We want better grass and hay." No doubt. But until we get it, let us feed out more grain.

Do not misunderstand me. I do not advocate growing wheat to feed out on the farm; we can grow oats, corn, and peas to better advantage. But if we have more wheat than we want—better feed it out than give it away. All I want to show is, that we need have no fears of permanent overproduction of grain in this country. All we need to do is to feed more of it out on our farms. We shall make more money and enrich the land—slowly it may be, but surely.

"We are paying out too much money for our phosphates," said the Deacon. If we sell all our grain, this may be true. But if we feed most of it on the farm, the larger crops we grow the more manure we shall make, and the richer will our land become. We have been selling too much grain at too low a price.

"Farmers," said the Doctor, "are taking off their coats and going to work with unusual vigor. They are plucky men. At present prices there is little profit in farming, and in some cases an actual loss. And this is one reason of the general depression of business all over the world. But it is a curious fact that, while hard times originate on the farm, the farmers themselves feel the hard times less than others. What the farmer sells brings little, and so he buys little. One farmer doing this has little effect, but when it is multiplied by millions, the effect is prodigious. Business of all kinds is seriously crippled. And unpleasant as hard times are for the farmer, he feels them less than others, because he lives largely on the produce of his land. One thing is certain; farmers in this section are feeling more hopeful. They are making improvements. And you may be sure, that better times are not far distant."

I owe many readers of the *American Agriculturist* an apology. They have asked me questions, which I promised to answer, and have not done so. The paper is crowded with much more valuable matter. In fact, never in its history has it been so "choke full" of valuable and reliable information, from the best practical and scientific writers. To answer all the questions asked me, would be to write an Encyclopedia of Agriculture and Horticulture. I am pleased to receive the letters. I read them all, and if I do not answer them, they set me to thinking and do me good. The following are brief answers to some of the questions.

Four-rowed and six-rowed barley are one and the same thing. In fact, I suppose there is no four-rowed barley. Barley is either two-rowed or six-rowed. Two-rowed barley is later and heavier than the six-rowed. The six-rowed barley will germinate in "malting" quicker than the two-rowed, and maltsters will pay more for it on this account.

We usually sow two bushels of barley per acre. We drill it in, and at the same time drill in with the seed two hundred pounds of superphosphate per acre. With us, superphosphate drilled in below the seed pays well on barley, oats, corn and potatoes. There are a score, possibly a hundred, good brands of superphosphate. Look at the analysis, and if you do not understand it, study the matter. It makes no difference whether the soluble phosphoric acid is obtained from rock phosphate or from bones. In my own case, I buy the phosphate that will give us the most "soluble phosphoric acid" at the least cost.

Barley does not do well on old sod land. It is sometimes sown to advantage on a one year old clover sod. As a rule, winter wheat does better after barley than after oats; mainly because the barley is harvested earlier, and there is more time to prepare the land properly for wheat. If you can not get barley in before the first of May, better sow oats, or plant corn, potatoes or beans.

Oats may be sown later than barley. They may also be sown on sod land. Of course, the earlier they can be sown, the better. We frequently sow oats and peas together, generally one bushel of oats and two bushels of peas per acre. The crop can be cut with a reaper. They do well on sod or stubble. The earlier they are sown, and the better the land, the better the crop, but we have had good crops sown the first or second week in May.

One of our correspondents says he sows "five pecks of red clover per acre." I sow a peck, and the Deacon thinks I waste my seed. Six quarts per acre is the usual quantity. In seeding with oats, sow a peck of timothy and a peck of clover. Make the land as mellow as possible, and after the oats are sown, go over the land with a smoothing harrow. Then sow the seed and roll the land. The best roller I have ever used, is made of iron cylinders, in three sections, one in front and two behind.

The best time to cut timber for an ox yoke is, when you find a stick of the right shape. The best time to remove suckers from apple trees, is to-day, or yesterday, or last month, or last summer, but never to-morrow nor next week. When you see a sucker, off with it. When young you can strip them off with your hands, with one-tenth the labor that will be required to saw or cut them off next spring.

The best variety of potato is not yet discovered. Plant the kind most popular in your own neighborhood, and test a few new sorts on a small scale. Water cress is a highly profitable crop. It does best in shallow streams or ditches, with fresh water running all through the year. A "stream with plenty of water in the spring, but which dries up in summer," is not the best place for it. Water cress sown on the sides of a stream running through a swamp on my farm, has grown so thick that it sets back the water, and a new ditch had to be dug.

To grow good beet or mangold seed, all that is necessary is to select the very best roots, and set them out in rows three or four feet apart, and a foot apart in the row. Cover the roots so that the top will be about an inch below the surface. Nothing more is needed, except to keep the land free from weeds.

In seeding down a new lawn, the great point is to make the land rich and mellow. Work it with the plow, harrow, roller, and steel rake, until it is as fine as a garden. If you are anxious to get the ground covered as soon as possible, sow the usual lawn grass mixtures, and a bushel per acre of millet or Hungarian grass. In a week or ten days the millet will completely cover the ground, and smother all the weeds. When the millet plants are two or three inches high, run the lawn mower over it, and repeat the cutting once a week. The grass and white clover will get well rooted before winter. You have quite a respectable looking lawn from the start, and next winter the millet will be killed. But if you try the plan, do not forget to use the lawn mower early enough. A few days delay, and it will be too late. The millet will get the start of you, and kill every spear of grass. But if you will commence early enough, and keep the lawn mower going, you will get a nice lawn quicker in this way, than in any other I have tried. I speak from actual experience.

It is an easy matter to raise asparagus plants. Sow the seed in rows eighteen inches or two feet apart. Drop two seeds to each inch of row. The seed can be sown with a garden drill. We have had good plants when sown as late as June, but earlier is better. All that is necessary is to keep the land clean, but this is essential to success.

How late we can sow or plant with a reasonable prospect of getting a crop, depends very much on the season, and somewhat on the character of the soil. We can plant an early variety of potatoes as late as the middle of June. But you will, as a rule, get a far better crop if planted in May. I have had good corn planted the first week in June. Rutabagas have done well sown the 4th of July. Mangold wurzels will produce a moderate crop sown any time in June, but if you want a big crop, sow in May. I have had a very profitable crop of beans planted the middle of June. But of course we plant earlier if we can get time to do the work. We plant with a drill in rows thirty inches apart, and drop about six beans in hills fifteen inches apart in the row. The quantity of seed required per acre, depends on the size of the beans. The white Boston Marrow beans require a bushel per acre. Pea beans, three pecks per acre. If you drill in the seed right along the row, dropping the beans about an inch apart, you require about twice the quantity of seed. Some of our bean growers think they get enough larger crops to more than pay for the extra seed, and for the extra work in pulling the crop.

The best food for lambs is the mother's milk. Feed the ewes well, and they will feed the lambs. When the ewes and lambs are turned out to grass, continue to feed hay. Some people say the ewes will not eat it. If not, it will do no harm to have it in the rack. One pound of grain to each ewe per day is the usual allowance. There is very little difference in the food value of a pound of wheat, corn, oats, barley, peas, beans, flax or oil-cake. Feed whichever is the cheapest or most convenient, but recollect that peas, beans, oil-cake, bran and malt-sprouts, leave a richer fertilizer for the farm.

The principal advantage in poling peas, is the convenience in picking. If you hope to see your wife and daughters take an interest in the garden, you will pole your peas. There are a score or more questions which I will answer next month.

The Scotch Black-Faced Mountain Sheep.

These hardy little sheep ought not to be overlooked by those who are carrying our civilization up the slopes of the Rockies, and in fact there is admirable ground for them much nearer to the markets, as upon the picturesque groups of mountains which make parts of New Hampshire and Vermont the resort of health and pleasure seekers, or which with varied topography as the Adirondacks, and the mountain groups of Central Pennsylvania, vie with Scotland in the beauty of their crags and lakelets, and trout brooks. These ranges have so great an altitude that ordinary crops will not grow, hence should be devoted to grazing. In many cases also with abundant pasturage, there could hardly be hay enough grown to winter the stock which could easily be carried through the summer. Thus we might repeat the Scottish and Swiss practice of summering in the mountains and wintering in the lowlands, where hay and straw are abundant.

These sheep, adapted both by nature and breeding to this rough life, are very picturesque with their long, wide-spread, curling horns, their smooth, black or speckled faces, and shaggy fleeces. They dress only about fifty-five pounds, but the mutton is something very superior, taking the very highest rank in the London markets. A model Black-faced ram should have long, arched, hard horns, turned quite clear of the head, a bare face, bare legs, well-sprung ribs, deep body, with wool, at shearing time, reaching within three inches of the ground. The so-called Roman nose and full face are preferred, and small-headed rams with horns which do not rise above the head are desirable. The weight of the fleece averages about three pounds, and brings but a moderate price, while the value of the mutton is so great that when well-fattened, a small Black-face will net its owner as much as heavier sheep of other breeds.

A PAIR OF BLACK-FACED MOUNTAIN SHEEP.

Engraved for the American Agriculturist.

Some Hints About the Garden.

A. S. FULLER.

It is an old saying that "the richest goods are put up in the smallest packages," and I have often thought it would be well if persons in making their gardens would think of this, especially when planting ornamental plants. There can be no doubt about the inconvenience of poverty and the want of means for making showy and extensive gardens, and this is one of the annoying circumstance which often dispel the aspirations of many an admirer of beautiful grounds and plants. But unlimited means and an extended area are not positively necessary in gardening, for a little picture may show as much artistic skill and be as valuable as a large one, and it is better to do but little work and do it well, than to undertake much and leave all incomplete.

It is an almost universal failing, of both the experienced and the inexperienced cultivator, to attempt more than can be readily accomplished with the means at command, and as regularly as the seasons come around, more work is laid out in the spring than can be completed during the summer. A larger number of plants are raised or purchased than can be properly set out and cared for; more walks are laid out than will be kept clean and free from weeds during the summer; in fact, it is so easy and agreeable to plan and to plant in spring that few persons can forego the pleasure, even if the account is to be more than overbalanced later in the season by chagrin at seeing poorly laid schemes for future enjoyment all come to naught.

The better plan is to strive to secure a neat little garden or a few beds of flowers, which can be readily managed, than to attempt so much that the labor involved becomes a burden instead of a pleasure. A few plants in perfection look better, and should yield the owner more pleasure, than many, with none perfect or well grown. One common error, in grounds of limited extent, is the introduction of larger plants than are adapted to the situation and surroundings, and the result is overgrowing and crowding. Trees are out of place in small gardens, if flowering plants are to be cultivated at all, for their roots not only soon take possession of the cultivated beds, but their branches shade the more humble plants, which need the direct rays of the sun. If trees are desired for shade in summer, then it is best to give up the ground to them and the grasses which will grow in the shade, for to expect little herbaceous annuals and perennials, or even the smaller shrubs, to successfully contend in the battle of life with the giants of our forests is absurd, and it is utterly useless to attempt any such combination in either large or small gardens, unless a person is satisfied with such scraggy specimens as seen in the undergrowth of the forests.

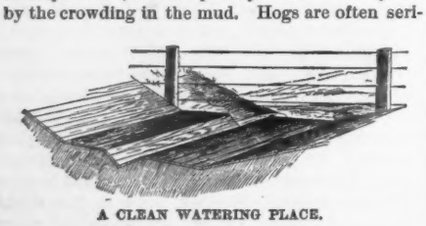
What are called mixed borders and beds are well enough, provided the plants employed are of similar growth, but large shrubs will soon overtop and crowd out the smaller; and the same rule holds

good even among our most common bedding-out plants. A bed of portulacas or verbenas can be dropped in almost anywhere on a grass-plot and look well; but to mix in coleus, geraniums and similar tall growing plants, would spoil it all, and be neither pleasing to the eye or healthful to the plants themselves. In the arrangement of plants in the garden, there should be concord of size and growth as well as harmony in colors, and this cannot be secured unless the planter knows in advance something of the habits of each species and variety which he proposes to introduce. By consulting seedsmen's and nurserymen's catalogues, information in regard to size and habits of plants may usually be obtained, at least, sufficient to prevent making any serious mistakes in the grouping of different kinds. The best and most pleasing effect can usually be produced by judicious massing of varieties of similar habits, even a half dozen geraniums will make a far better show if set together in a group than if scattered in a border among other plants. If deciduous shrubs are to be planted, let it be in a border or in groups, the largest in the background or center, thence gradually decreasing the size down to the edge, where the dwarf Deutzias, Spiræas, and similar low growing shrubs, come in very appropriately to complete the arrangement. A place for each class of plants and each in its place is a far better kind of arrangement than to scatter the specimens about promiscuously, where it will require more labor to give them proper care than when planted in borders or groups, where the entire area occupied is kept constantly cultivated and free from grass and weeds.

In the planting of evergreen shrubs the same plan should be followed, although when all are of a similar habit, less attention need be paid to the arrangement of the different species and varieties; but the smallest or trailing species should be set on or near the borders of groups. It is not advisable, however, to carry this idea of grouping and massing of kinds to such an extent that the plantation will look stiff and formal, but the object is to form easy and graceful outlines and still have the groups and beds look natural, or as though that it was within the possibilities for the plants to have come up from the seed in the position where they are growing. Of course I do not now refer to the modern style of arranging bedding-plants with ornamental leaves, for this is a species of gaudy ornamentation subservient to no rules except those which fashion may dictate from year to year; but real genuine art in gardening must ever rest upon a more substantial and less fantastic basis than the mere color of leaves, or brilliant shades of flowers.

Watering Place in a Creek.

Cattle naturally select a certain place in a watercourse to drink at, where the bank is not precipitous. During a good part of the year this bank is muddy, on account of its moisture and trampling of the animals. As a result, the horses get the scratches, the cows come to the milking pen with muddy udders, and frequently animals are injured by the crowding in the mud. Hogs are often seriously injured, because the mud becomes so deep and tough, that they are well nigh helpless in it. Another objection is that the animals wade to the middle of the creek, and soon make its bottom as muddy as the bank, and the water becomes unfit for drinking. The arrangement shown in our illustration, which may be built of heavy plank, brick, or flat stones, prevents all this. It is constructed by first making an incline to a level platform for the animals to stand on while drinking. This plane terminates in an abrupt descent, forming a trough for the water to flow through. The trough should not be more than two feet wide, that the animals may easily get across it. The level floor permits the animals to drink at their ease, often a matter of importance. Such a drinking place should be made at the upper end of the creek, where it passes through a field to prevent the animals from soiling the water by standing in it above where they drink.



A CLEAN WATERING PLACE.

Raising Flax Seed.

Flax will succeed on any soil that yields satisfactory crops of spring grain. On the contrary, if the soil is so thin and poor that it will produce only a few bushels of grain per acre, the owner of the land cannot expect a good crop of flax. When grain has been raised for several years on certain fields, and flax has not been one of the crops of the farm, it will usually be more profitable to raise flax, for one season, than to continue to grow barley, or oats, or rye, year after year, on the same land.

Fig. 1.—YOUNG FLAX PLANTS.

Flax seed (if well cleaned) may always be sold at a fair price for making linseed oil and oil cake. There is also a market in the older states for all the haulm, or flax-straw, which is used to make tow; the straw is usually sold by the ton, to those who rot it properly and pass it through brakes, removing the "shives" from the fibre, which is packed in bales.

The soil requires a more careful preparation than for barley or spring wheat. The kernels of all sorts of cereals remain in the soil during germination and growth of the stems, whereas the kernel of flax is lifted by the radicle or stem of the root above the surface of the ground, where the seed splits into two equal lobes which form the seed-leaves of the young plant; see figure 1 in which also plants are seen in other stages of development. Figure 2 shows a plant in full bloom. The blossoms of flax are usually of a bluish shade. As the seed is small there is great danger of burying it too deep. Cereal grains will send up their sharp-pointed spears when covered with several inches of earth; but if a kernel of flax is buried three or four inches beneath the surface of a heavy soil, there will not be sufficient force in the tender radicle to thrust the germinating kernel to the surface. Consequently the seed must die and decay. The soil should be plowed thoroughly as for spring wheat, and the surface leveled off as true and smoothly as if seeding down a meadow. If the land is lumpy, it should be rolled, that the surface of the ground be smooth, so that the crop may be mowed close to the roots. The aim should be to have every kernel of the seed buried at a shallow and uniform depth, so that all the stems will grow alike and the seed ripen uniformly, otherwise the seed of some of the bolls will be dead ripe, while other stems are only in blossom.

The seed may be sowed by hand, or with a seed-drill, or with a broad-cast seed-sower; but teams should never be allowed to travel where the seed has been distributed. A grain-drill that can be regulated to put in the desired quantity at the proper depth, may well be used. But, in mellow soil, there is great danger of burying the seed too deep. If sowed by hand, as the kernels are so slippery, half the quantity of seed should be sown in one direction, and the other half going at right angles. Cover the seed with a brush-harrow, with which a strong man can go over ten acres in a day. The quantity of seed per acre will depend on the size of the kernels. If the latter are small, sow between half a bushel and three pecks; and if the kernels are large, nearly a bushel per acre is about right. When the object is seed raising, the seed sown must be distributed very thinly. Sown thin, every stem will throw out numerous branches and every branch yield plump seed. There is usually nothing gained by sowing before the soil is warm enough to plant corn; weeds and grass will get the start of the plants and maintain the ascendancy. It is safe to say, sow flax when it is safe to plant Indian corn.

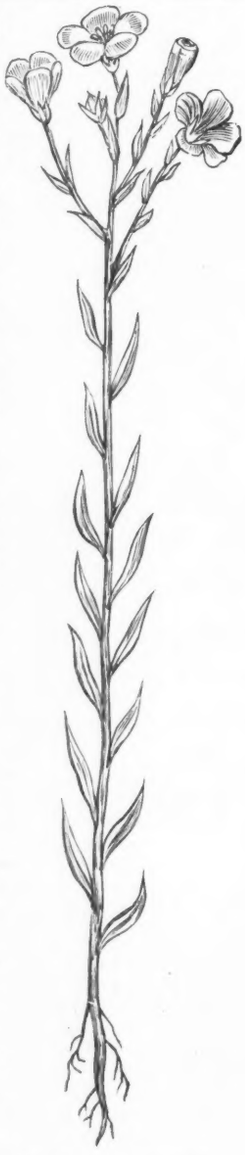


Fig. 2.—FLAX PLANT IN BLOOM.

As soon as half the bolls or heads turn brown, the crop ought to be mowed. If the surface of the ground is smooth, the crop may be cut with a reaper. Teams ought not to travel over the mowed or the standing flax. As soon as the haulm is cured and dry, the crop may be stored in the barn, or put in a stack until winter, or the seed threshed or shelled out by a machine. Many employ horses to tread out the seed on a threshing floor. The seed is cleaned in an ordinary fanning mill, and the haulm sold to dealers in flax-tow. Ordinarily a crop of flax will yield a larger net profit than a crop of wheat. The great fertility of the new soils of the far West and their freedom from weeds, makes linseed a very profitable crop. The straw is neglected, but the seed pays better than wheat. And the planter should remember, that it is a very exhausting crop.

Forwarding Early Potatoes.

Cutting up perfectly dormant tubers, and planting the sets in cold soil, is not the way to have a crop of new potatoes early. All of the methods for "forwarding" the crop, begin with exciting the tuber into growth and inducing the eyes or dormant buds to start. In Lancashire, Eng., the growers build frames of sods, in which the potatoes, already started in boxes in the dwelling houses, are planted. These frames are covered with straw mats, which are removed whenever the sun can shine upon the soil within them. Such interest is felt there in potato culture, that whoever forwards the first hamper of potatoes to market, is given a prize by his brother growers. We illustrated this Lancashire method some years ago, and and few years later, that we saw on the Island of Jersey, which bears something of the same relation to the London market that the Island of Bermuda holds to the New York market. On the Island of Jersey, the potatoes are stacked on end in a crate made for the purpose, which exposes them to the light, and they become thoroughly greened, in which condition they are kept until planting time. In France, the leading early potato is the "Marjolin." This, figure 1, closely resembles the "Ashleaf Kidney" of the English. It is a remarkably smooth potato, having a prominent eye at the "seed-end," and a few obscure eyes distributed over the surface. Planted in the usual manner, the "Marjolin" is very slow to germinate,

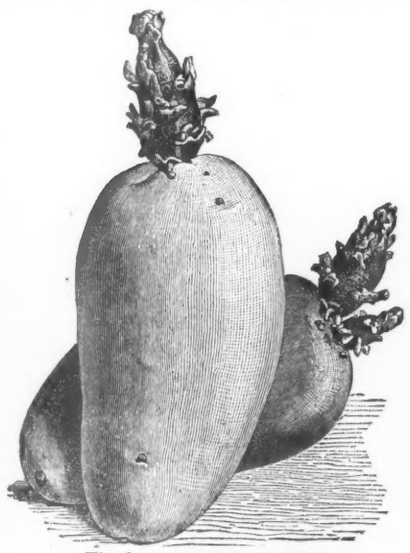


Fig. 1.—MARJOLIN POTATOES.

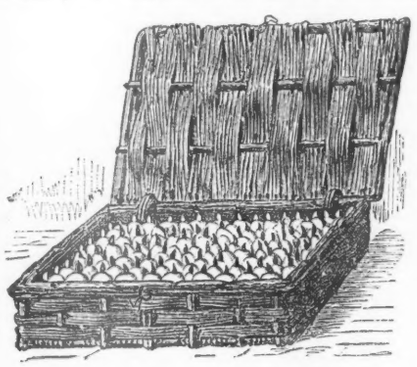


Fig. 2.—BASKET OF SPROUTED POTATOES.

and the Paris seedsmen offer their customers seed-potatoes that have been already forwarded. At the time of digging the crop, the tubers, of uniform size, are selected, and placed on end, seed end up, in panniers or hampers. The potatoes (fig. 2) are stacked together so closely that they will retain their position when the pannier is handled. In this position and exposed to the light, the prominent eye develops rapidly, and may be kept in this condition until planting time. Those with us who grow potatoes for market, cannot afford to be at much trouble to forward their early potatoes, but by exposing their seed potatoes in a warm, light place, they may make an appreciable gain. Those who pride themselves on having early potatoes from their own garden, can gain much by adopting some method for starting the growth of the eyes before the tuber or set is planted.

Green Manuring.

THEODORE GOODRICH, ILL.

By the term green manuring, is meant the practice of growing and plowing under crops in the green state, to enrich the soil. A soil is said to be productive in proportion to the amount of humus it contains. Humus is formed by the decomposition of animal and vegetable matter. If a heavy growth of vegetation, grain, clover or weeds is plowed under, a certain amount of plant food is returned to the soil. It would be very natural to suppose that the decayed stem of one plant would contain good acceptable food for another. If plowing under has been done on a yellow clay soil, six months afterwards, by digging down through the furrow, a dark stratum will be found where the weeds fell and rotted. Repeated plowing under of green crops will fill the ground with humus, and restore the worst worn out land to fertility.

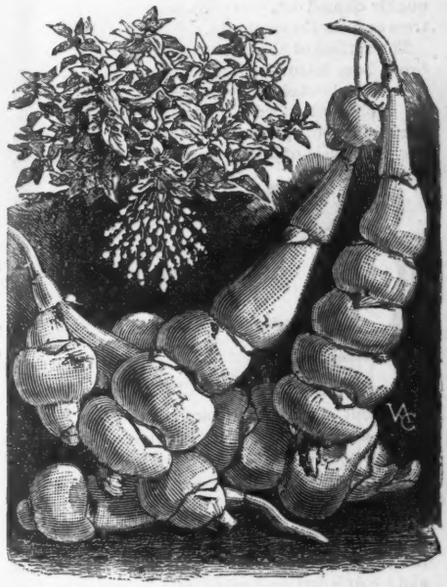
One objection to this method of fertilizing is the length of time required, as several years must elapse before many crops could be added to the soil. It is very important then, to adopt the rotation that will admit of the greatest number of crops in the shortest time. Some plants add more fertility to the soil than others, but these are not always the ones that are easiest grown, especially on poor ground, and it is very important to get a good growth to plow under. Rye will grow where no other grain will, and yield a fair crop. Another advantage is its growth in winter. In the latitude of Southern Illinois, rye may be sown in November and plowed under when fully headed out in May, and the ground sowed immediately with southern cow peas and plowed under in July or August. Another sowing of peas will make a partial crop by the first frost, when it can be turned under and the ground again seeded to rye. This makes three crops plowed under in one year.

Greens.

The desire for fresh vegetables in spring, is not a mere fancy, but is a craving of the system for a healthful change in the diet. It is well known that sailors, who on long voyages subsist largely, if not solely, upon salted and dried meats, are attacked by a dreaded disease, the scurvy, for which fresh vegetables are a ready cure. The families of many farmers, are confined during the winter months, to a diet of salt meats, almost as exclusively as are sailors upon a protracted voyage. Salted meats are convenient; they afford a supply of animal food with little trouble, and the pork-barrel and the smoke-house are drawn upon from day to day, with little thought of the effect upon the health. As spring approaches, the desire for fresh vegetables becomes intense. The farmer is fortunate if he has a good supply of cabbages well preserved; these if eaten raw, as salad or cold-slaw, will go far to offset the scorbutic effects of continuous salt meat. A well regulated farm-garden—alas that there are so few, will supply, except in three of the coldest and three of the hottest months, an abundance of spinach, the best of all greens. Also the German Greens, or Kale, an excellent non-heading cabbage, which is all the better the more it is frozen. If cabbages are wintered in trenches, or in a cellar, in such a manner as to preserve the stumps, these stumps, if set out in a sheltered place in the garden, as early as the ground can be worked, will soon produce an abundance of tender shoots, which are most excellent greens, and may be cut over several times. So with turnips; if planted out in the same manner, they will afford acceptable greens. But we now have in mind those families to which the garden offers nothing. These must hunt the fence-rows or the pastures, for some green thing. One of the commonest wild plants collected for greens, and one of the earliest, is the Dandelion, a favorite with many on account of its slight bitterness. This is usually fairly abundant in the pastures. But, if you, the reader, have a garden, no matter if a poor one, stop here, and make a memorandum to send to your seedsman, for a packet of "Improved Dandelion" seed; sow these in good ground; when the plants are well up, thin to a foot apart in the row, and plant the thinnings to extend the plantation. Keep clean all summer, and next spring you will not be hunting for dandelions, for the garden will yield an abundance of the most delicious, and so welcome, that the planting will not be omitted in future years. It is a waste of time to hunt the pastures and road-sides for greens, when they can be so readily had in the garden.

A New Vegetable—"Choro-Gi."

We expect that every year will bring a number of new varieties of well-known vegetables. Indeed, it would be a poor year, if the English seed-growers did not give us at least half a dozen new peas or new names, but to have an entirely new



THE NEW VEGETABLE—"CHORO-GI."

vegetable added to the list, is something noteworthy. The fact that this novelty is offered by the house of world-wide fame, Vilmorin-Andrieux & Co., of Paris, indicates that the new plant has some merit. The plant in question is *Stachys affinis*, which is a native of Northern Africa; it belongs to the Mint Family, and, what is unusual in that family, produces fleshy, tuberous roots, which are the edible portion. We reproduce Vilmorin & Co.'s engraving, which gives the habit of the plant, with the tubers drawn on a larger scale. The tubers are dressed like string-beans, or fried in the form of fritters, and are said to make an excellent pickle. When freshly dug the tubers are pearly white, but upon exposure to the air they become blackened, hence it is advised to dig them only as wanted for use, or if dug in advance, to keep them covered with earth. *Stachys affinis* is the botanical name, and we are given "Choro-Gi," as a synonym, probably the name by which it is known in its native country. The plant is said to be very hardy, and to produce abundantly without special cultivation. Whether this will be a useful addition to our list of vegetables, can only be ascertained by trial in various parts of the country; at present, it looks as if it would be an amateur's, or "fancy" vegetable, rather than a regular crop for market.

Preparations for Planting Cranberries.

JAMES WEBB, MASS.

In clearing a bog, we first mow off all the bushes and low undergrowth. Next, we cut the principal roots of the large trees, and the wind will generally blow them over. The ground being soft, they will pull up a great mass of roots in their fall.

Fig. 1.—TURFING AXE.

This is the cheapest and best way of getting rid of the trees. If the trunks were cut off above ground, it would take many days' labor to dig out and chop off the roots, so as to allow the stumps to be removed. In the simple way here suggested, we get rid of the stump and all by one operation. In case the wind does not prove sufficient to bring down the trees, we pull them down by means of a tackle. The trunks are sawed up into logs for boxboards, or to cut up into cord wood, and the refuse tops and brush are piled up in heaps and burned on the bog, as soon as they are dry enough.

One can not be too particular in eradicating the roots of maple trees and huckleberry bushes. They sprout and grow rapidly, and if not thoroughly cleared out, give more trouble than all other trees and shrubs combined.

The surface of the bog, after the trees and underbrush have been disposed of, is next cut into segments of about eighteen inches square, by means of an implement called a "Turfing Axe," made especially for this purpose. A turfing axe, shown in Fig. 1, consists of a thin, steel blade, hatchet-faced,

Fig. 2.—HAULING RAKE.

and about six inches square. This blade is made fast to a stout hickory handle, some two feet and a half long, in the same manner as a common wood axe. In expert hands, this axe does wonderful execution upon the tough, interlacing roots, with which the surface of the bog is filled. The method of cutting the turf is this: One man cuts across the bog, from side to side in parallel lines, a foot and a half apart, and cuts across between the lines at like distances. Two men, with three or four-pronged, iron-toothed rakes, take hold of the turf, as the cutter goes along, and pull it over after him. After being cut into these squares, it is desirable that the turf should be turned over very regularly, because the more evenly it is turned over, the easier will be the work of grading.

A bog should be graded and made as smooth and level as possible—in fact, as near a "water level" as may be—because if it is of a good, even grade, it will take less water to flood it, and if the supply

Fig. 3.—GRADING HOE.

of water is limited, it is, of course, essential that this particular should be closely attended to. On the other hand, if the supply of water is abundant, so much care need not be exercised in this particular. If, for instance, a pond adjoins, or a river runs through the bog, it will be readily seen that it will answer all purposes to make the bog of its natural grade.

If there is a great deal of brake or other wild stuff, which is hard to kill, and the bog is high enough to stand it, having a fall of from three to six feet, then it will be well to turf the whole of it, and have the top removed to the most convenient place, and burn it on the spot, or deposit it upon the nearest adjoining ground. This course will save a great deal of labor and extra expense in weeding. The advantage of this course being apparent, the additional first cost will never be regretted.

The grading should be as carefully done as if laying down a lawn or pleasure ground to grass, the object being to get an even coat of sand over the whole of the surface of the peat or muck. If numerous holes and hollows are left here and there over the

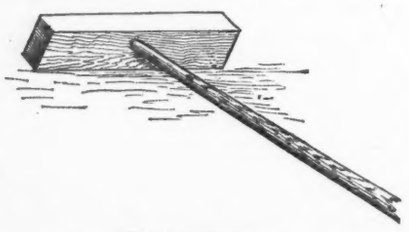


Fig. 4.—SPREADER.

surface, then there would be places, in levelling up with sand, where the coating would be six or seven inches thick, instead of three or four inches, the desired thickness. The consequence would be that the vines would make a very uneven growth; those which were set where the sand was the deepest, would be a year or two longer in making a growth through such a coating, than would those planted where they could readily strike their roots down into rich muck beneath.

A hoe, shaped like a common grubbbing hoe, is the implement used for grading. Every farmer knows what that is; but the grading hoe, fig. 3, should be made of the best steel, and ground to an edge like an axe—the object being to cut all the fine roots to pieces, and get out such of them as escaped when the trees, stumps, shoots, and larger wood were removed.

After the bog has been levelled, an even coat of sand free from clay, four inches in depth, should be spread over its whole surface. It is a great advantage to have the sand in close proximity to the bog, as it saves the expense of carting. In spread-

Fig. 5.—MARKER.

ing the sand it is usual to lay down some two-inch plank, eight inches wide, for a walk, and the sand is brought on in wheel-barrows. The planks are laid from the sand pit or outer edge of the bog to the center ditch, and are removed as fast as the bog is sanded.

The sand is spread by means of a "Spreader" (see fig. 4), made of a piece of one-inch white oak board, about fifteen inches long by three inches wide, and fastened to a handle.

When the operation of spreading the sand is completed, we next make use of an implement called the "Marker." This (fig. 5) is made of a piece of two by four-inch joist, about nine feet long, having teeth set eighteen inches apart, and a handle the length of a rake-handle. The teeth are eight inches long, made of white oak, driven through holes bored in the joist for the purpose. The implement is made similar to a common rake, with teeth farther apart, and the whole made stronger to stand harder usage, by having stays running from the handle to the head, which holds the teeth.

To mark off the bog, a line is stretched, say six

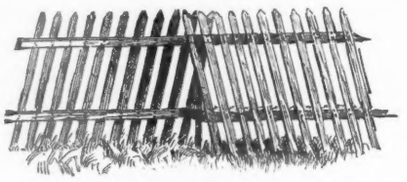


Fig. 1.—MOVABLE FENCE.

inches from the margin of any one of the intersecting ditches, as a starting point, and run the marker lengthwise of the line, and continue to mark to within six inches, or the same distance of the next intersecting ditch, and so continue back and forth between the shore and central ditch until that particular section has been gone over; we then proceed to the next section, and mark it in the same manner, and so on in rotation, until all have been marked in the same way. We then draw the marker transversely across the sections, that is to say, at right angles with the first marking. The sections, when the marking is completed, have much the appearance of a checker-board. All this is done preparatory to planting the vines.

Light, Movable Fence.

Turkeys, even after they have attained a considerable size, should be confined until after the dew

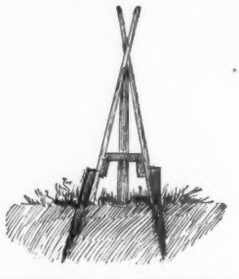


Fig. 2.—CROSS SECTION OF MOVABLE FENCE.

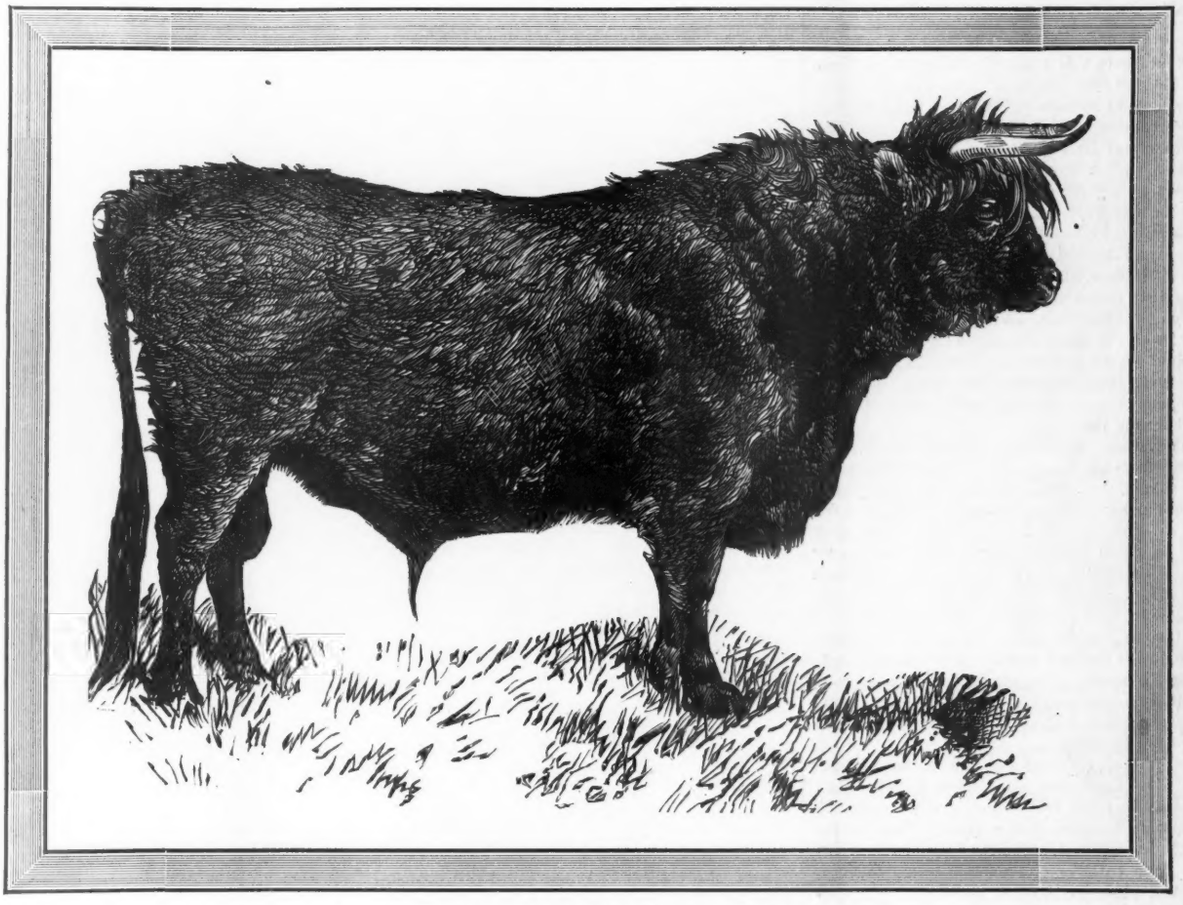
is off the grass, and other fowls must be confined in limited runs, while the young are small. It is quite an advantage if these runs can be changed easily, and this can be accomplished only when they are enclosed with a light, movable fence. Such a fence is shown in the illustration, figure 1. It is made in twelve to sixteen feet sections by nailing laths to light pieces of the proper length. The upper ends of the laths are sharpened; the end ones are of double thickness. The sections are placed with the end laths intercrossing at the top, and about six inches apart at the bottom (see cross-section, fig. 2). They are held apart by blocks (fig. 3), which rest on the upper edge of the cross-pieces and against the laths. They are held together, and to the ground, by stakes driven against the outer side of the end laths. As these stakes have the same angle as the laths, they hold the sections together, and also the fence in its place and down to the ground. The triangular space where the sec-

Fig. 3.—CROSS-BLOCK FOR FENCE.

tions join is closed by a lath driven in the ground or tacked to the block between the cross-pieces. Corners must be formed of two sections inclined inwards, and in the same way that sections are joined. The stakes are easily withdrawn, and the sections are so light that they are easily handled.

West Highland Cattle.

It is only within a few years that any of these curious and valuable cattle have found their way across the Atlantic. They are one of those original or native breeds of the British Islands, which have under the intelligent breeding of the English and Scottish farmers, been of such benefit to the world. The cattle are native to the bleak hills of the extreme North of Scotland and the Hebrides Islands. They have been bred by the hardy mountaineers and islanders for hundreds of years, and often barely four out of five survived the winters, so severe is the weather, so scanty was the fare, and slight the shelter, if indeed any shelter at all was given to any but the bearing cows. Thus the race has been subject to the constant thinning out of the weakly ones, the "fittest" only surviving, and the result is a breed of astonishingly strong vitality, with ability to live on the roughest fare, responding quickly to good feed, fattening where some other cattle would eke out a bare living, and laying on flesh with astonishing rapidity and economy, when well fed. This gives to the beef most superior quality, so that when the steers are brought down to the rich lowlands, and fattened for the London market, the beef is said to sell at a penny (two cents) a pound more than the best English beef. We have bleak, rough hills, with scant pasturage, and exposing gales enough to make Rob Roy think he was on his "native heath," and at least to remind these cattle of "home sweet home." Besides, we have as rich pastures as Scotland or England can boast, and markets nearly or quite as good for fancy beef as London. So we hope that the Highlanders will have a warm welcome, and their breeders find their venture a profitable one.



A WEST HIGHLAND BULL.

Drawn and Engraved for the American Agriculturist.

SUMMER FEEDING OF SHEEP.—Some very good shepherds, indeed a great majority of the keepers of stud-flocks, give their sheep a little hay all summer. It is only a very little, and that of very sweet hay. A still smaller number give lambs and choice rams a daily ration of grain, generally consisting of wheat bran and oats mixed in about equal portions. It is claimed that this dry-feeding in summer steadies the animals' appetites, acts as a corrective of acidity and flatulency, a preventive of colic and scours, and a general tonic to the system; this more especially when the weather is exceptionally wet and the grass slushy. To the breeders of high-priced standard sheep there is undoubtedly much force in this argument; they find profit in the course above indicated; and it affords no just ground for the odious charge of pampering.

Pedigree Percheron Horses.

The early importations were all grays, and gray was preferred as the typical color. It is the prevalent color of the Arab, the favorite color with M. Du Hays and other distinguished breeders and writers, in fact it is characteristic, and any other color has been regarded with suspicion as indication of impurity of blood if not of an absolute "bend sinister." Nevertheless the tendency of American buyers to select blacks, chestnuts, and even bays was so strong that, in order to secure the higher prices which, so to speak, "fancy-colored" horses would bring, it led many breeders into a course of breeding, to say the least, criticisable.

When the interest in Percheron horses grew so rapidly at the West, many buyers visited France and bought horses simply to sell again, with little regard to pedigree or points, except as they affected the sale of the animals.

Pedigrees were practically unknown among French breeders. The stallions passed through two or three hands before the American buyer saw them, and neither of their owners thought or cared about pedigrees. The same was true of mares, unless brood mares were bought, and even their owners rarely had any knowledge of their breeding, except, perhaps of their sires.

The French were not long in finding out that they were neglecting an element of value. So immediately after the establishment of the American Percheron Stud-book in 1876, the friends of the pure race in France, bestirred themselves in earnest to carry out M. Du Hays' plan of a Percheron Stud-book. This was consummated, and the first volume published in 1883.

It may indeed be a question whether there may not be just as good, or better horses outside of the stud-book as in it, but those recorded we know are at least born and bred in Perche, and in a few generations a great change will be noticed, we have no doubt.

Those passages in M. Du Hay's book in which he asserts the introduction of foreign blood, even of big mares, to increase the size, gave great offense to many Percheron breeders, and in the preface to their stud-book he is soundly taken to task for uttering such sentiments, which they characterize as "involuntary errors." The pressure upon the historian was so great that he was forced, in a measure, to recede from his position. Nevertheless we think no unbiassed mind, with a knowledge of the state of things in Perche twenty years ago, can fail to believe that M. Du Hays was quite correct in his statements.

The race is of most wonderful prepotency, and we have no doubt can, as it were, absorb and assimilate a great deal of foreign blood, so that after a few generations it will be entirely lost. Certainly with careful breeding it may be entirely bred out. This will be the natural course of things now that the stud-book is well established, and American breeders, by admitting to their Herd-book only animals recorded in the Percheron Stud-book of France, and their progeny will cause the true Percheron characteristics to be better established.

Brooders.

P. H. JACOBS, N. J.

The principal conditions necessary in a brooder are, plenty of *fresh air* and sufficient *heat* to prevent the chicks from crowding. We have a building here, now in operation, divided into ten apartments, each apartment being five by seven feet, and accommodates one hundred chicks. The building is fifty feet long and ten feet wide, and a passage-way running its whole length, takes up fully three feet of the ten, leaving the spaces for the chicks seven feet. The yards are sixteen feet long and five feet wide. The chicks are all brooded with

Fig. 1.—ARRANGEMENT OF HOT-WATER PIPES.

a stove. To describe how it is done, we will explain that figure 1 is a box six inches deep, three feet wide, and fifty feet long. Two-inch iron pipes are arranged as appears in the illustration, the top of the box being removed to show the interior. The hot water may be supplied by an ordinary stove "water-back," or by a coil of pipe in a stove. This is heated by a piece of pipe one inch in diameter, coiled in a stove, holes being cut in the stove for the purpose of admitting pipes. The hot water flows out and the cold water flows in. The floor of the box is made close, of tongued and grooved boards. The cold air enters through tubes reaching to the outside of the building. It is heated by coming in contact with the pipes, and enters into the tubes on the top of the floor, which are two and a half inches high. Over these tubes are little tables, one yard square, and three inches high, with strips of cloth tacked around the edges.

The advantages of this brooder are, that it gives the heat from the top, as the warm air strikes the under side of the table (or brooder) and diffuses it over the chicks, which can not crowd easily, as there are no sides or corners. The warm air is pure, as it comes in, fresh from the outside, and serves as heat and ventilation at the same time. Figure 2 shows the ground plan complete. The building has a window to each apartment, which is hung to a weight, so as to move up or down. Hence, when the window is up, each apartment becomes a shed, open to the south. The chicks have a sand floor to scratch on, and are allowed to run in the yards when two weeks old. Fig. 3 shows the outside view of the building.

This building, together with the heating arrangements, did not cost over one hundred dollars. When the chicks are ready for market, they are expected to realize six hundred dollars gross. The cost for feeding the chicks to the age of ten weeks is ten cents. The total cost, including value of eggs, food, and other expenses is about nine cents per pound. They will average one and a half pounds

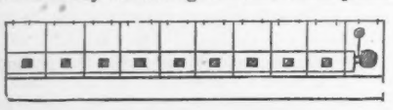


Fig. 2.—GROUND PLAN OF BROODING HOUSE.

when eight weeks old, and often bring fifty cents per pound. The building contains one thousand chicks, and as a new brood can be put in every ten weeks, it will hold five thousand in a year. The building and yards do not take up more than twenty-six by fifty feet of space, or less than one-thirtieth of an acre.

The chicks are fed on hard-boiled eggs the second day, no food being given the first day. Then milk and bread are allowed. On the fourth day they are fed on a mixture of one part corn meal, one part bran, and one part middlings, with a small quantity of bone meal, and ground, or finely chopped meat. They are fed five times a day till feathered, then four meals are given. Chopped cabbages, onions, and other green food are supplied. Skimmed milk may be used in the food, which should always be scalded or cooked. Plenty of water, gravel and dry earth are kept before them, a few screenings being scattered in the dirt to induce them to scratch. In giving water never allow them to become wet, as dampness is fatal. Avoid *bottom* heat in a brooder, as it causes leg weakness. It is always better to have too much heat in a brooder than too little, but the reverse is the case with an incubator.

A light, sandy soil is best for chicks. Hence, poor and unproductive locations can be thus used with advantage. Chicks require unceasing care, but by raising them in large numbers, labor may be economized. They need no care at night, other than to keep up the fire, which may be arranged so as to give sufficient heat till morning. They should be fed very *early* and *late*. When ready for market correspond with a reliable commission merchant before shipping.

We have two or three large broiler establishments here, in one case two young ladies are hatching several thousand chicks annually, and they find it very profitable. As stated, nearly all the failures come from the *eggs*, and not from incubators, and until poultrymen realize this fact, they will meet with disappointment. The loss does not exceed seven per cent, and that includes the weak chicks, and all that die by accident. No gapes or lice effect them, as everything is kept very clean. As to what may be expected, it may be stated that if fifty chicks are marketed from every one hundred eggs used, the result will be satisfactory, but this includes loss from bad eggs, dead chicks, and other causes. The chicks grow faster than when with hens, as they receive better care, and can be counted at any time. They are safe from all ene-

Fig. 3.—OUTSIDE VIEW.

mies. My advice to beginners, is to begin with a small incubator, and experiment the first year. Experience will be the best teacher. Do not expect too much, and do not expect to raise chicks without work. Watching, care, and labor are essentials. No incubator or brooder, however well regulated, can be trusted. They are treacherous, but will return a handsome profit if properly managed.

Golden (German) Millet.

JOHN GOULD, OHIO.

Your subscriber (page 8th, January number) who desires a "plant that will grow vigorously on poor soil," could only in this world succeed with cactus plants. I have raised millet as my principal hay crop for fifteen years. My stock being chiefly dairy cows. I have never found any hay equal to it, and now my cows grumble exceedingly because clover hay—very choice—is alternated with millet as a ration, refusing to touch the clover, so long as there is any millet in sight. I find my greatest success with it, as a crop to follow corn, instead of oats. If the corn was on sod, the millet crop that follows will grow at least five feet high, often parts of it will go even higher; and five tons of cured hay per acre, is no fable. It needs rich land, made very fine. Its roots are surface feeders, and will not go down like corn roots, therefore the land should be made mellow and compact before sowing the seeds, and then not use over forty-eight pounds to the acre, sown broadcast, and cover very lightly. It leaves the land in the finest possible condition for a crop of wheat. Golden millet should not be sown until the first week in June, and it will then be ready to cut in seventy-five days. Cut as soon as the heads are all well shown and developed—*i. e.*—the seeds just going into the milk. Then the crop does not exhaust the land, as it does when it is allowed to stand and mature the seed. The seeds when matured are very hard, and are not digestible; so if allowed to form and develop, the grain—about forty bushels per acre—is lost as a feeding element, and the value of the foliage lessened to a corresponding extent, as it becomes "woody," and not only looses a part of its food value, but calls upon the digestive organs for extra exertion to assimilate it, while it renders, for this outlay, no adequate compensation.

Millet has no superior as a hay ration for milch cows. Early-cut millet has been fed to a greater or less extent to my team of horses without other than favorable results.

[The reports we occasionally have of injury to horses by feeding millet hay, no doubt came altogether from hay which was too ripe when cut. Millet straw, out of which ripe grain has been threshed may be fed to cattle and hogs without harm, and is quite nutritious.—ED.]

The Use of Blinds on Horses.

COL. J. P. BATTERSBY.

The custom of putting blinds on horses indiscriminately, is a great error. Carriage horses look well in showy head-gear, and handsome blinds are a great improvement to the style and general appearance of real, well set-up carriage horses. But for buggy, car, cart, stage, wagon, truck, and general travel, they are wholly unnecessary, and as regards safety, they are a detriment rather than an advantage. What do surface car horses want with blinds? Horses, like ourselves, want to see where they are going, and the horse that shies, proves that he wants to keep out of danger, by the very fact of his shying.

We must consider that a horse leading an artificial life, like ourselves, walking in the dark in a strange place, doesn't see what is around him if he has blinds on, and is therefore naturally timid and careful. If a horse is too careful, and takes too wide a circuit in shying, it is with the best intention from his instincts. But because he does it a little too much, and more than his driver sees necessary, he should not be abused, but spoken to softly and kindly, and thus encouraged, for he means no wrong. The stupid lunk-head will go so close to a hole that one wheel will fall into it, while the horse of intelligence, will keep well away from it, but not having studied geometry, he does not know the exact length of the axles, and the distance necessary to keep from the danger. Man himself doesn't keep away from danger at all times, though he has the advantage of sense and reason supplied him.

The lunk-head is called "a family horse," that doesn't care where he goes, and depends on his driver to look out for danger, or he expects to be pulled and hauled about and guided by the reins, which supply him with all the sense he wants While the intelligent horse that wants to see for himself, is called a "shyer," that does not care, and while he often overdoes it, he as often gets cursed at and whipped. When horses stop with some drivers, they are petted and coaxed until they start; then they are whipped, checked and beaten, as if (to them) for going on. If they are to be petted for doing what they should not do, and whipped for what they should do, how are horses to understand it?

A shying horse, and a sulky, balking horse, are different. Shying is not a vice; it is more a habit than a fault, knowing that he doesn't mean it. There are times when a shying horse could save life, if he'd only shy at the right time and place. One course is to chastise or correct a horse if necessary for doing wrong, and encourage him for doing right. If he be whipped for stopping, the whipping should cease when he goes on, and not until then.

To give a horse a fair chance to see around him, we would use a headstall without blinds. But we would make an exception of the carriage horse, for we want him for style, park show, and excusable vanity, and to indulge this very harmless ambition, we will admit that the carriage and coupè horse, for this reason, should have on blinds, and let the driver, instead of the horse, look out for danger.

Dark Nests—Cure for Egg-eating.

C. G. KLEINSTUECK, MICH.

Mr. Wiseman's sketch of his poultry feeding trough, in your January number, has given me such a valuable hint how to overcome the really great difficulty of keeping chicken-feed clean, that I send a hint about another useful piece of poultry

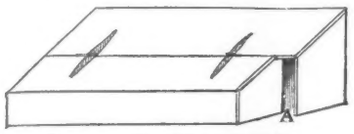


Fig. 1.—DARK NESTS FOR HENS.

furniture, which I have been using with thorough success. My large flock of Light Brahmas learned egg-eating from a high-priced hen, and nothing, except the strictest watch, could keep them from ravenously devouring their own products. I lost many valuable eggs and tried ever so many devices to cure this egg cannibalism, all without success, until I saw an arrangement of nests similar to the plan shown in the accompanying sketches. They are cheap; need neither floor nor back; keep the eggs from chilling longer than open nests; they are perfectly dark inside; the hens not being able to see the eggs are unable to eat them. Besides, I consider them quite an inducement for the hens to lay; they always like to go around a corner to deposit their eggs in a dark place, and that is exactly

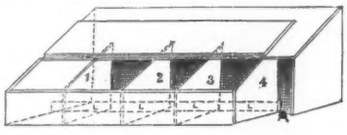


Fig. 2.—NEST BOXES WITH LIDS OPENED.

what they can do with my nests. I use common, inch boards. The whole arrangement is about five feet long, a foot and a half high in the rear, eight inches in front. The left end piece is about twenty inches wide, the right one ten. The partitions, 1, 2, 3, 4, are cut out of a twelve-inch board, and reach up a few inches under the main roof of the box, thus leaving a walk about eight inches wide between the nests and the wall against which the nest box is to be placed. The front board (eight inches high) is fifty inches long, allowing about eleven and one-half inches for every partition (each one inch for each dividing board). The lid is of the same (fifty inches) length, ten inches wide, and fastened to the main roof by means of a pair of light strap hinges. To form the nests and steady the partition boards, I use a lath (*LL*) about three or four inches wide and forty inches long, nailed against the back edge of the nests. The entrance (*A*), is about nine inches wide. I built a dozen boxes of forty-eight nests' capacity, in about eight or ten hours. To keep vermin out, I saturate all parts with crude petroleum oil before putting them together. No matter how cold it is, I get eggs every day now, and a good many other poultry keepers would get them, too, if they only could keep their hens from eating them, for most hens are addicted to egg-eating in winter.

Making Posts.

There is quite an art in splitting logs into posts. Every post should have some heart wood, which

Fig. 1.

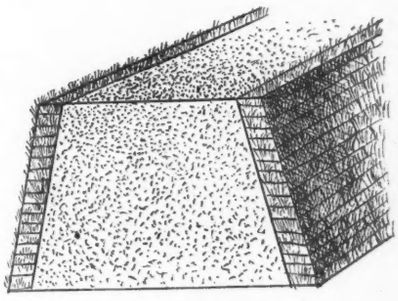
Fig. 2.

lasts the longer, for two reasons: That there may be durable wood into which to drive the nails, and that some of the posts may not rot off long before others, as they will be composed entirely of sap-wood, making the most annoying of all repairing necessary. If the log is of a size to make twelve posts, split along the lines of figure 1, which will give each post its share of heart wood. This will make a cross-section of the posts triangular, the curved base being somewhat more than half of either side. This is a fairly well-shaped post, and much better than a square one having little or no heart wood. Although the log may be large enough to make sixteen or eighteen posts, it is better to split it the same way. It should first be cut into halves, then quarters, and then twelfths. If you attempt to split one post off the side of a half, the wood will "draw out," making the post larger at one end than the other—not a good shape, for there will be little heart wood at the small end. When the log is too large to admit of its being split in that way, each post may nevertheless be given enough heart wood by splitting along the lines, shown in figure 2. First cut the log into halves, then quarters, then eighths. Then split off the edge of each eighth, enough for a post—about one-fourth only of the wood, as it is all heart-wood, and then halve the balance. A good post can be taken off the edge, and yet enough heart wood for the remaining two posts will remain.

Building a Dam on Low Land.

Preparatory to making a dam through a bog, a trench has to be dug directly at the spot where the dam is to be placed—about four feet in width, and down to the hard-pan, if the muck is not too deep. A location where a solid foundation for the dam can be reached is desirable. The trench should be filled in with sand or clay; level with the surface of the surrounding bog, and the surface of the bog should be turfed to a distance of four or five feet on each side of the trench, and all stumps and roots taken out, so as to make a good foundation for the dam to rest upon.

The foundation of the dam should be not less than twelve feet wide from outside to outside, in



DAM THROUGH LOW LAND.

case the surface to be flowed is of any great extent—say fifty acres. The sods or turf, which have been removed from the bog, should be used to make the outside of the dam. They should be laid flat, one upon the other, and after every layer add sand of sufficient depth to fill up all crevices, and to cover over each layer of sods thoroughly and evenly. The joints should be broken in laying the sods, and the whole work should be very carefully done. Two walls of turf are thus built, and the space between them has to be filled in with sand or clay, and the dam should be raised to a hight sufficient to flow the bog if desired. It would be well in making the outside of the dam, to lay the sods so that they will take root in the spring, and grow and hold the whole structure firmly together. For this reason, it is better to make the dam in the spring than in the fall. The walls, or sides of the dam should gradually taper from the foundation to the top, so that, starting with a width of twelve feet at the bottom, it will be nine feet wide at the top, and will be suitable for a driveway in crossing the bog. The accompanying illustration, showing a section of dam, will give an idea of this method of structure.

JAMES WEBB.

Land Marker.

Figures 1, 2, and 3, represent a one-horse land marker, such as is used in Rensselaer Co., N. Y., among the gravel and cobblestone soils of that section, where it does good service. The drawings

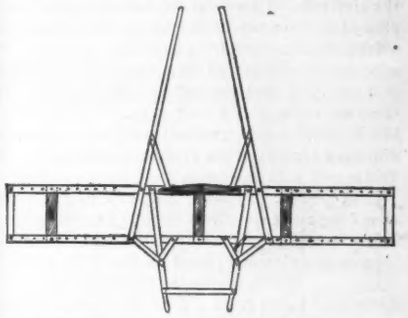


Fig. 1.—LAND MARKER COMPLETE.

and description are furnished by Mr. John Jeannin, Jr. The lumber should be of well seasoned oak; the long rails, two by three stuff in pairs; the cross bar and end pieces the same; the cross bars in which the teeth are set, three by three inches square; the thills one and a half by two inches at the large ends and tapering beyond the braces. The handles are common straight plow handles, that is, bent only at the grip. Three-eighths bolts are large enough for the frame.

The centre tooth should be framed in stationary,

Fig. 2.—END VIEW OF LAND MARKER.

the outside teeth being adjustable, work in the slot between the long rails, and are held in place by two three-eighths iron pins. They can be moved so as to mark from two feet six to five feet. The rails should have seven-sixteenth holes bored through them every three inches, commencing at two feet six from centre of middle tooth. For shares use old points of shovel plows. The whiffletree is held by a bolt passing through the centre cross-bar.

Figure 1 shows the adjustment of the teeth, one being set at two feet six, the other four feet, also the position of the thills, the whiffletree, the handles. The cross rail tenons at end should fit in the ends of slots and be bolted fast with three-eighths bolts. The braces on thills and handles are of iron, quarter of an inch thick and an inch wide, held by quarter inch bolts. Figure 2 is an end view, showing the pitch of handles and thills, a tooth also, and the mode of fastening the same. Figure 3 shows one end of a pair of long rails, which form the slot for a movable tooth; also the shape of share. This implement is not patented,

Fig. 3.—MOVABLE TOOTH OF LAND MARKER.

and can be made by any one with common tools and the knowledge of how to use them.

MAKING VINEGAR.—A subscriber desires to know what to put into a "barrel of cider to turn it to vinegar." The best substance for this purpose is good strong vinegar. In a small way the most convenient plan is to keep a barrel two-thirds full of vinegar, and when any is drawn off, pour an equal quantity of cider into the barrel. In this manner the vinegar will always be of a uniform strength.

Land Plaster—Its Use and Value as a Fertilizer.

ISAAC H. FICKEL, OHIO.

Soils in general consist of disintegrated rocks. Disintegration of rocks is caused by the action of the elements. Chemistry has taught us that every crop of grain or hay, fruit or vegetable, taken from a field, removes therefrom a certain quantity of the mineral ingredients, as lime, magnesia, sulphuric acid, etc., and that the soil is made poorer until these are replaced. Liebig says: "Large towns, like bottomless pits, gradually swallow up the conditions of fertility of the greatest countries." "The field is sold with the crops."

Land plaster (Gypsum, Sulphate of Lime) has been long and extensively applied to land in many countries and to various crops. But it has probably been more extensively used in the United States than in any other country, and with great benefit. Every crop taken from a field diminishes the elements in that field necessary to a succeeding crop; hence, in time the field becomes what we call "worn out." The following table shows the matters removed from the soil in 1,000 pounds of each crop:

	Nitrogen.	*Potash.*	*Soda.*	*Magnesia.*	*Lime.*	*Phosphoric Acid.*	*Sulphuric Acid.*
Wheat, grain	20.8	5.5	.6	2.2	.6	8.2	.4
" straw	3.2	4.9	1.2	1.1	2.7	2 3	1.2
Oats, grain	19.2	4.2	1.0	1.8	1.0	5.5	.4
" straw	4.0	9.7	2.3	1.8	3.6	1.8	1.5
Indian corn	16.0	3.3	2.0	1.8	.3	5.5	.1
" stalks & leaves	4.8	8.9	1.2	2.6	3.8	3.8	2.5
Red Clover hay	21.3	19.5	.9	6 9	19.2	5.6	1 7
Tobacco	46.0	54.1	7.3	20.7	73.1	7.1	7.7

Of the elements in the above table, sulphuric acid, phosphoric acid, lime, magnesia, potash and nitrogen are necessary to plant growth, and the absence of any one of these would render a soil incapable of sustaining agricultural vegetation of any kind. To cure soil exhaustion, we must either restore the essential elements removed from the soil or we must change the state of those which still exist, so that they may become available plant food. A farmer must have the food for the plant before he can expect to get the crop; hence, he has to learn what his soil is deficient in. The following is the analysis of gypsum:

Sulphuric Acid	46.51
Lime	32.56
Water	20.93
	100.00

Hence, it is readily seen that the elements of land plaster enter largely into the composition of plants. Important changes are produced upon other elements, which will be treated of further on. Besides entering into the crops, sulphuric acid and lime are washed out of the soil, slowly, but continually, and in quantities whose aggregate is quite large. Hence, this is one advantage gained in the use of land plaster as a fertilizer,—it should be constantly applied to make up the constant loss of its elements.

SOIL BEST ADAPTED FOR THE USE OF LAND PLASTER.—Where there are so many different kinds of soil as we have in this country, it is hard to arrive at any definite conclusion as to which soil is best adapted to the use of land plaster. The south and southeast parts of this State (Ohio) consist of natural soil, while the remaining portions consist of drift, brought down from the far north. Our natural soil as a rule already contains a large amount of lime, and hence the application of land plaster thereto would be of no benefit. But portions of our drift contain only a small amount of lime; on this kind of soil, land plaster may furnish extraordinary results, because it supplies an actual deficiency of this ingredient. From land plaster, plants may provide themselves with lime and sulphur; but it will act only on such soils as are destitute of one or the other of these substances. A farmer, if possible, should know the chemical analysis of his soil. If he has not this opportunity, he should find out its wants by careful observation and experiment.

All experiences agree that for the development of the manuring effects of land plaster, it requires a soil which is loose, deep and dry, containing those elements in some form essential to plant growth, in a state suitable for the action of lime and sulphuric acid. In England and Germany, light, sandy soils, loamy sand, marly loam, sandy loam or chalk soils, in a dry situation, and with a porous subsoil, are the ones which manuring with land plaster has proved best and surest; while on heavy, or clayey soils, as well as on wet and cold bottom fields and meadows, it has produced but little effect, and in particular cases has been actually injurious. It has been of just as little use on poor, weak, exhausted fields. These statements should induce farmers who have tried land plaster on wet land without results, to repeat those experiments on the same fields after they have been rendered drier, and less tenacious, by drainage.

If the soil is destitute of these matters essential to plants, that is, if it is entirely exhausted, no effect of land plaster can be observed, for the soil must first contain all those matters which vegetation requires in some form. A dry, deep, well cultivated, middling clay soil would be the most favorable for it. Again, climate has much to do with its action. The land must be so situated that it will receive a sufficient supply of rain. Wet weather causes it to act more rapidly, while drouth arrests it, because the means are then wanting to render it soluble. Too heavy storms of rain act unfavorably.

ACTION PRODUCED BY LAND PLASTER.—We have seen that land plaster is especially adapted for use on certain soils only. Those which are poor in lime, and those which have been partially exhausted by cropping, are the ones that will be most benefited by an application of this kind. Upon these soils land plaster is supposed to produce the following results: 1. By entering into the composition of vegetable life. Braconnot and Sprengel hold that it supplies sulphur for the formation of the legumen of the leguminous plants. Hegder claims that if the soil is very much in need of lime, calcareous earth plays here the prominent part. Experiments upon clover have shown that land plaster caused an increassd formation of vegetable structure, the leaves increasing in size, and being of a deeper color and more succulent. This is usually followed by an increased formation of seed. 2. (*a*) By its action upon the elements already contained in the soil, but in an inert state. (*b*) Its power in fixing volatile and escaping carbonate of ammonia. (*c*) As a regulator of the supply of water.

On some soils the application of land plaster is equivalent to an addition of potash and magnesia, because the plaster liberates these elements from their chemical combination and renders them soluble, and therfore available to plants. Pagel observed that in the fermentation of bone-dust, thirty-nine per cent of the original amount of nitrogen escaped, while this loss was reduced to less than one per cent, when gypsum was applied as an absorbent. This shows that land plaster may be used to great advantage to sprinkle in stables, poultry houses, and privies, where it absorbs the escaping gases, saving them for the use of plants, besides purifying the air.

CROPS MOST BENEFITED BY THE USE OF LAND PLASTER.—In Germany the use of land plaster has been most beneficial upon grass and clover, while in parts of this country it is applied with advantage to almost every crop. The most universal agreement, however, prevails that land plaster is above all a specific manure for red clover and such plants as have an abundance of delicate and succulent leaves and stems. As a rule, it may be said that land plaster is of more value to broad-leaved plants than on grasses. Lampadius says of the use of land plaster on clover in Germany: "It may with certainty be stated that by the use of gypsum (land plaster) the produce of clover and the consequent amount of live stock have been increased at least one-third." Land plaster is an excellent dressing for wheat. Mr. Harris says, in his "Talks on Manures," "Clover is good for wheat; plaster is good for clover." "It is good for pastures and meadows; also favorite for young corn and potatoes." It is a valuable application to tobacco, because it renders soluble and accessible the potash and magnesia, which too often exist in close combination. Land plaster is a manure for the sub-soil, and therefore, its effects are greater on all plants which derive their nourishment from that source.

TIME AND MODE OF APPLICATION.—Much depends upon the time, the kind of crop, and the method of applying land plaster. Care must be taken in order to obtain the best results. The following are the experiments of Prof. Kœrte in the same field:

Undressed	100	pounds yield.
Top dressed on March 30	132	" "
" " " April 13	140	" "
" " " April 27	156	" "

Thus it is easily seen that much depends upon the time it is applied. To obtain the best results it should be applied in the finest powder, the weather damp, in the morning or evening while leaves are wet with dew, and when the plant is from two to four inches high. On meadows and wheat it is usually sown broadcast. In the case of potatoes it may be put into the drills or holes along with the manure. Emerson and Flint say that "plaster should be scattered in the shape of the finest impalpable powder in the spring, just as vegetation is beginning, while the dew of the morning or evening is on the plants, that it may stick, but not in rainy weather." It should be applied every spring, or as often as the crops require it.

QUANTITY PER ACRE AND COST.—In regard to the quantity of land plaster to be used, 200 or 300 pounds per acre is sufficient, if in a very fine powder. The cheapness, and the valuable qualities of land plaster as a fertilizer, make it one of the most economical methods of restoring the fertility of soil. The cost varies according to the locality. Freight is an important item, when long distances are considered. At this place it can be supplied for about six dollars per ton.

RECAPITULATION.

Soil.—Not sufficient in lime or partly exhausted by cropping; sufficient amount of rainfall. Light, sandy, loamy sand, or dry, deep, well-cultivated, middling clay most favorable.

Necessary Elements of Soils.—Nitrogen, potash, magnesia, lime, phosphoric acid, sulphuric acid.

Composition of Land Plaster.—Sulphuric acid, lime.

Action.—Elements of land plaster enter into plant growth; dissolve potash and magnesia; absorb ammonia, forming nitrogen.

Climate best Adapted.—Moist; frequent precipitation.

Crops Most Benefited.—Clover, meadows, wheat, tobacco, corn; valuable for many.

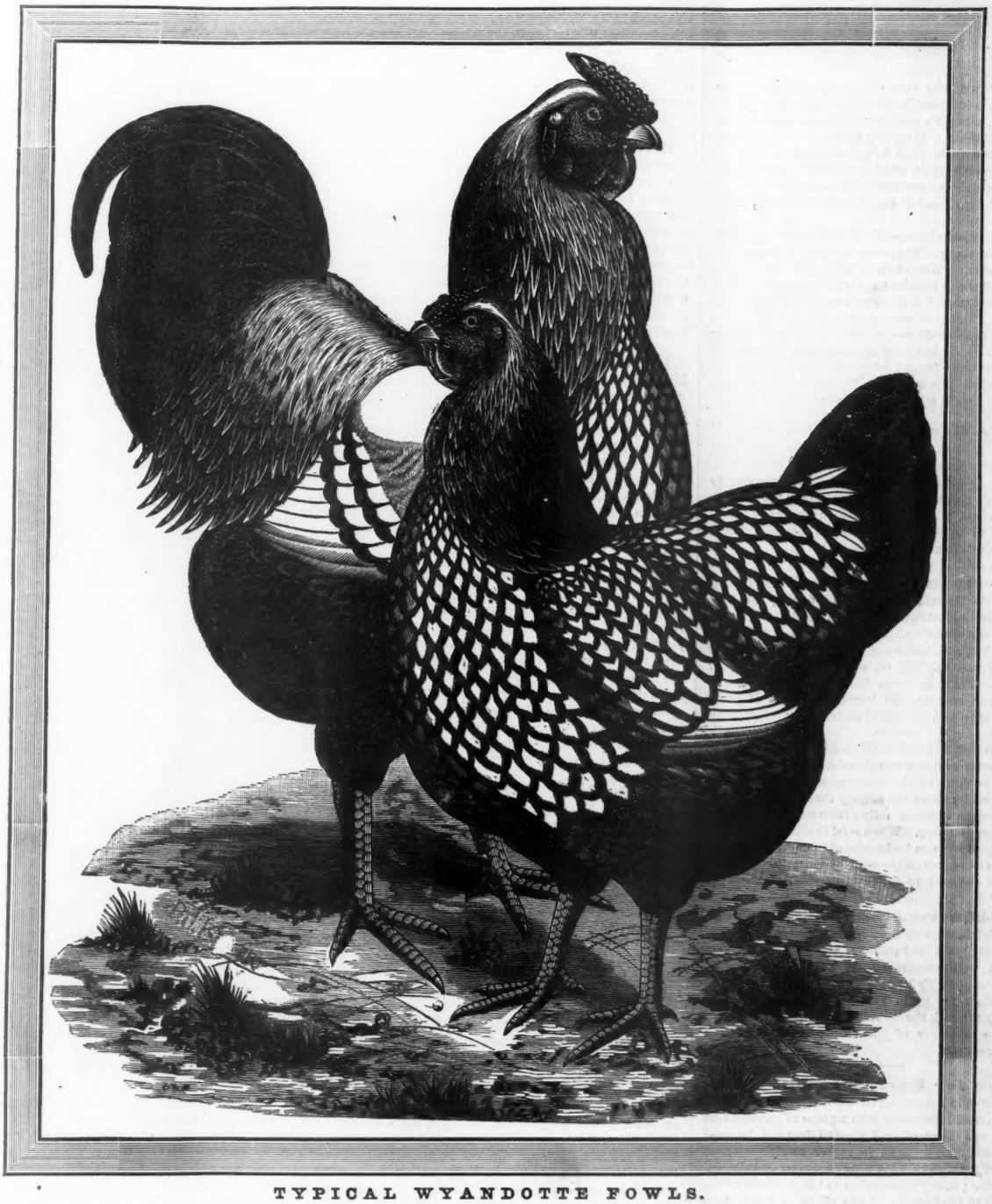
Time Applied, Etc.—Spring; plants smalll, sown broadcast (or in hill with seed) while wet with dew.

Quantity and Cost.—From 200 to 300 pounds per acre in fine powder; cost, about six dollars per ton.

ADULTERATED MILK.—Water is the basis of all milk adulteration. Its presence was once thought to be easily detected by the lactometer. This instrument showed the specific gravity of the mixture, but it was found that cream and water were so nearly of the same specific gravity, that milk could be skimmed of part of its cream, and by adding a certain quantity of water, be brought to the specific gravity of full milk. There are in use some simple methods of analyzing milk to detect the presence of added water, coloring matter, etc., but the general tendency now is to make laws, requiring all milk to contain certain percentages of solids, made up of fats, caseine, and sugar, ranging in totals from eleven and a half to thirteen per cent. The former is the English, and the latter the Boston standard. It has been found, that milk can be adulterated in the cow quite as easily as in the can, by obtaining cows that naturally produce large quantities of poor milk, and by feeding them with poor, watery food. Under former laws, if it could be proved that the milk had not been tampered with since leaving the cow, it was merchantable no matter how poor it was.

Wyandotte Fowls.

The Wyandottes are now recognized as one of the most useful breeds of fowls, and when bred, equal to the best specimens in color and markings, will certainly give poultry raisers great satisfaction. When we first saw them a good many years ago, they had the good points of cross-bred fowls. A few were well marked and handsome, but it would have been impossible in a flock of twenty, to have picked out a trio fit to put in a show coop. Their breeders said they were so good, grew so well, were so prolific; made such good broilers and grand roasters, that they ought to be admitted to "the standard." Still, year after year, the assembled poultry wisdom of the country kept them out, until 1883, when such uniform and handsomely marked fowls were shown, that they were admitted. They had, it seems, about fifteen years' probation, and are improving still every year. Each succeeding year's shows presenting better marked ones than the year previous; and they have won their way to their present popularity by combining real merit with beauty. In this latter quality they are superior to the Plymouth Rocks; but in other respects they strongly resemble this favorite breed, of American fowls. They have beautifully laced hackle and saddle; solid black tail; breast white, heavily laced with black. The wings, when folded, show the much coveted duckwing mark, or bar of black. They have a low, medium-sized comb, with well-defined spike of moderate size. The comb, wattles, and ear-lobes are of a deep, rich red color, and they have smooth, yellow legs. They are an exceptionally hardy fowl, standing our severe winters fully as well, if not better than any other breed. They mature very early; pullets often commence laying at five months of age; and although not persistent sitters, they make excellent mothers when allowed to bring off their chicks, and they are very domestic in their habits. Our illustration shows a pair of the perfect type of this now very popular breed, and was taken from fowls raised by Geo. A. Preston, Binghamton, N. Y.



TYPICAL WYANDOTTE FOWLS.

Utilizing a Dry Well.

A correspondent who had a well dug without finding a vein of water, and desiring to utilize it nevertheless, walled it, and then made a pond some distance away, on higher ground, where there was a favorable place for it. He dug a ditch three feet deep, from the pond to the well; filled it half full with sand, and completed the filling with the soil and clay taken from it. He made a cut-off at the upper end of the ditch, and the usual outlet for the pond. When the pond was filled, the water from it percolated through the sand in the ditch to the well, being purified on the way, and filled the well. The supply in the well is regulated by the cut-off at the upper end of the ditch. Thus he has pure well water for the stock to drink, and a pond for the cattle to stand in and the hogs to wallow in. As he can have both the well and the pond full at the beginning of the dry season, he has never been out of water. The hogs and cattle enjoy the pond, but always go to the trough at the well for a drink.

OUR BASKET

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or, a small club may be made a large one at reduced rates, thus: one having sent 5 subscribers and $6.00, may afterwards send 5 names more and $4.00, making 10 subscribers at $1.00 each; and so for any of the other club rates. Subscriptions can begin at any time, as every number of the paper is complete in itself.

Bound Copies of Volume 44 (for 1885), are now ready. They are uniformly bound, in cloth, gilt backs. Price at this office, $2. If sent by mail, $2.30. We can usually supply at same rate any of the previous volumes, *i. e.* from volume 16 to 44 inclusive.

Peach Yellows.—E. P. Tomlinson, Hunterdon Co., N. J.—It has been claimed, that this disease is caused by minute fungi; later observations indicate, that the disease is due to minute living forms other than fungi. "The case is still on," as the lawyers have it.

Death's-Head Moth.—"M. W. F.," West Newbury, Mass., writes us that he found a single specimen of this European insect (figured in March last), in his locality last summer. The caterpillar lives largely upon the potato plant, making its chrysalis in the ground, and it would not be surprising that in the many recent importations of potatoes, an occasional chrysalis should come over as a "stowaway."

Prospects in Alabama.—W. G. Nixon writes us: The freezings of the soil during the past winter, so unusual down here, will doubtless bring about fertilizing qualities. Indeed, everything denotes prosperity. We would like much to see northern people coming here and settling on our rich soil and in our genial clime. There is room here, and all people who come have the earnest and hearty welcome of every true-hearted man and woman in the country.

Alfalfa in Utah.—Wm. Mendenhall, Utah Co., U. T., sends us a fine sample of Alfalfa seed, which, he writes, is produced in immense quantities in the Territory. For fodder there are usually three cuttings made in a season, each cutting yielding from one and a half to two tons of hay per acre. When seed is allowed to ripen, only one crop of hay can be harvested in a season. Baled Alfalfa hay is delivered on the cars for six dollars per ton, and the area devoted to Afalfa is constantly enlarging.

Land Plaster.—C. G. Kleinstück, Kalamazoo Co., Mich., says farmers in that section have difficulty in getting good land plaster. Our Eastern markets are supplied with excellent plaster from Nova Scotia, and this might possibly be obtained by water as return loads or ballast for grain vessels, even in Michigan. Make inquiry through the agricultural college at Lansing, no doubt the professor of agriculture will give you the desired information.

Manure for Early Peas.—G. Mac., N. B., asks: "Would a dressing of wood-ashes and coarse salt, placed on and harrowed into a piece of ground this spring, that was manured and plowed last fall, be good for early peas? The ground is rather sandy."—Those who grow large crops of peas near us, prefer stable manure to all else; using twenty-five to thirty loads to the acre, applied in the furrow. As to ashes, it rarely fails to benefit any crop in any kind of soil; with salt, the case is different; its value upon most crops is very doubtful.

Kidney Worms.—E. Van Fradenburg, Schoharie Co., N. Y., sends us a tin box containing some leaf-lard, with long, slender worms in it, and asks what they are, and if they do the hog any harm. They are known as "Kidney Worms," and Dr. Chase says of this parasite, it infests hogs to an alarming extent, and though not fatal in its effects, is a frequent cause of disease. When fully grown, it is as large as a small wheat straw, and nearly two inches in length. It inhabits the leaf-lard in the neighborhood of the kidneys, and sometimes there are scores of them in the same hog. It is nearly black along the back, and of a brown color along the belly. It is the cause of weak loins, and produces a slight inflammation of the kidneys. Turpentine is the best remedy, for its rapid absorption has the effect of driving the worms further from the neighborhood of the kidneys. There is no way known for expelling these worms from the system.

A Plea for Herefords.—A. H. Rhodes, Erie Co., Pa., writes us: "So far as my experience goes, I have no hesitation in declaring in favor of the Herefords for beef. Of all the breeds, they are the first to arrive at maturity, and are the nearest to perfection in all other respects." Mr. Rhodes thinks there is much more profit in raising Herefords, than any other stock, unless it be sheep. There certainly is a growing demand for this breed of beef cattle in this country, while the honors won by Herefords at the Chicago Fat Stock Show, speak volumes for them in a close, practical contest.

Mould in Cellar.—C. C. Craft, Allegheny Co., Pa.—To prevent mould in cellars, several precautions must be taken. A dry hillside should be selected as the location for the perfect cellar, with a ditch dug around and below the foundation and filled with broken stones or gravel, then grouted and cemented. From the lower side a tile drain should carry off the surplus water. Fruits or vegetables, if not placed on shelves, should be on platforms an inch or two above the floor. Decayed vegetables or fruits must be removed and the cellar kept clean. If mould still appears, dust the floor and walls with air slacked lime, and repeat this occasionally.

Pyrites.—Fool's Gold.—Thos. A. Rankin, Hamilton, Texas, sends a very common mineral, which consists of sulphur, combined it may be with iron, copper, nickle, or tin, of a metallic lustre, white, bronze-yellow, and various other colors. There are three kinds of pyrites: cubic or yellow, marcite or white, and magnetic pyrites. Cubic pyrites are largely used in the manufacture of copperas and sulphuric acid, and in Sweden for obtaining sublimed sulphur. From the fact, that its glittering appearance has caused so many to think that they had discovered gold, it has been given the popular name "Fool's Gold."

Horse with Broken Leg.—The horse, being kept for carrying or hauling loads, or making speed, it is absolutely necessary that he should have strong legs. He is so unmanageable that it is nearly impossible to get the broken ends of the bone together, and keep them there long enough to thoroughly knit. Unless the horse is quite young when the leg is broken, and he is wanted for the stud, it is best to kill him. There are some instances of bad breaks being entirely recovered, but they are the exception with the horse. A simple fracture may be carefully treated by slinging the horse, and a perfect recovery accomplished, but it is unusual.

A Poultry Farm.—J. L. Stringham, Brooklyn, N. Y. Starting a poultry farm, and making a profit out of it, is a more serious business than most persons think for. To be successful, it is a mistake to hope for aid from some one posted in the business. Very few persons indeed, ever made a success of raising poultry on a large scale. To do so it would be absolutely necessary to begin on a small scale, and gradually build the business up as it proved profitable, and a demand for increased facilities arose. Dearly purchased experience is the only guide to successful management, both in raising and marketing fowls. An excellent work on poultry raising, is Profits in Poultry, O. Judd Co.

Heaves, or Broken Wind.—The peculiar double spasmodic actions of the horse's flanks call attention to the presence of this trouble. It is brought about usually by severe labor immediately after eating a hearty meal, or drinking too much water when overheated. Sometimes a lingering cough will end in "broken wind." The only remedy known to the profession is through a mild treatment with arsenic to the extent of fifteen grains a day until signs of improvement appear; but at the West a Composite plant—called Rosin-weed (*Silphium laciniatum*) either in its fresh or dried state, affords relief, which is said to be permanent so long as Rosin-weed is at hand.

Guernsey Cattle.—Mrs. J. E. Austin, Dickinson Co., Kans., wants to know the size, color, and characteristics of Guernsey cattle. They are quite uniform in size, weighing about one thousand pounds, more or less. In color they are usually and quite uniformly a pale, faded yellow, with markings of white. Sometimes the yellow shades into a reddish brown. The skin is buff on the nose and exposed parts, and more yellow inside the ears and under the hair, than that of any other breed. The milk is exceedingly yellow, and about as rich as, and similar in quantity to the Jersey milk. The general belief among dairymen is that they can make more butter per cow than from any other breed, but so far reported tests of yields have not demonstrated this as a fact, but certainly the butter has a higher color on grass, and does not fade out white in winter.

Packing Pork for Summer.—When the pork has been smoked, take a box or hogshead, put a layer of clean timothy hay in the bottom, on this place a layer of the meat, then put in another layer of hay, next a layer of meat, and so on till the box or hogshead is full, after applying the last layer of hay. Be careful to have the hay dry. Cover the box tight, and put it in some cool, dry, airy place, where the cats can get around it. An empty bin in the granary is the best place, the cellar will be too damp. If the meat has been properly pickled and smoked, it will keep perfectly for ten months or more, packed down in this way, which is much nicer and cleaner than packing in salt or ashes.

How to have Healthy Peach Trees.—Peter Gross, Lehigh Co., Pa., writes us that he keeps his peach trees in a healthy condition by removing the earth from the roots around the stem, in the month of March or early in April; if borers are found in the stem they are cut out and destroyed. Flannel or cloth is then wrapped around the lower part of the stem, close to the roots and a foot upwards; about two pounds of hen manure is then scattered over the roots, and the earth replaced. By being planted on dry ground, and following the above course for several years, his trees have never suffered from late spring frosts, and yield good crops every year.

Heaping Coals of Fire, etc.—FREEBORN CO., Minn.—MR. DAVID W. JUDD, 751 Broadway, N. Y.—*Dear Sir:*—Have just received your portrait of Gen. Grant and Law Book, as premiums for my subscription to the *American Agriculturist*. If you can stand it, I can; but your Law Book seems to me a very fine thing to receive in addition to the paper itself, which is fully worth the money. Many thanks. Hope your shadow may never grow less. Besides, now you notify us you are to send a portfolio of engravings of our "Farmer Presidents." That is heaping on our heads "coals of fire;" but not the disagreeable kind. You "do us proud." Yours respectfully, J. C. IRWIN.

Which is the Best.—W. S. Fowler, Michigan City, Dakota Ter., writes us to know which in our opinion is the best ensilage cutter, and which is the best feed mill. Such questions are often asked by subscribers to whom the following is the only answer that can be given. It is not within the limits of any one man's experience to know which one or half dozen of the multitude of these machines made is the best under all conditions. We must refer readers to the advertising columns, and advise them to correspond with those firms that offer kindred machines for sale. Our advertisers, so far as diligent inquiry can determine such matters, are thoroughly reliable, and they possess all the information upon such matters that familiarity can give.

A Mare Afraid of Rain.—J. A., Brooklyn, N. Y., has a fine mare in every respect, except that in a rain storm she acts like a lunatic; he wants a remedy to make her accustomed to rain. As soon as the weather becomes warmer, have a rubber blanket fastened on her with a surcingle, and with a stout rope halter that she cannot break, tie her to a strong post in a pasture near the stable, and let her stand through every rain that occurs, until she seems to like it. At first a man should stand by to soothe her. This treatment, when once begun, should be persisted in until a cure is effected. It matters not how badly the mare may act at first; she will soon quiet down. An artificial rain might be made with a sprinkling rose attached to a hose.

Gathering and Marketing Sumac.—B. D. Overton, Boone Co., Neb., asks us several questions, and ends the list with; "In short, I want to know if it is worth bothering with?" Each season we have numerous questions of a similar purport, and instead of answering Mr. Overton by a brief negative, will endeavor to anticipate the queries of dozens of others. There is no sale for sumac in the trade, unless it is in marketable shape; it must be dried, ground, bolted and baled, and after all this is done, it sells at too low a price to pay for long transportation by rail. If one can sell the dried leaves at a tannery near by unground, it may pay to collect them if he has no more profitable employment. Those products that can be had for the taking, are, as a rule, left to a cheap kind of labor, that few who have a regular occupation care to compete with. The principal source of the sumac that reaches the eastern cities, is Virginia and other seaboard States, where it is gathered by the negroes, and other poor people. There are mills for grinding and preparing it for market at Richmond, and perhaps other cities, where water transportation is at hand.

Moles in Indian Territory.—Doctor Leo Bennett, Surgeon Mo. Pa. Railway, writes us: "The moles burrow about in my garden, and eat up seeds and vegetables. Please give me some suggestions how to get rid of them." Having tried the various remedies that have been suggested, we can not advise any but a good trap. It is very probable that the mole so troublesome in the South-west, is a different species from our pest, which is not frightened off by coal-tar, and will not take poison. Try offering a price for each head or skin.

Lump in the Teat.—Wm. D. Lewis, Lewis Co., N. Y.—This affection usually comes from an attack of mammitis, or garget. The general remedy for this disease is first a purgative, and the cow is put on bran mashes with little hay. The udder must be fomented for several hours, and at the end apply a large, hot poultice, as hot as the cow will bear it. If abscesses are to be opened, call in the services of a veterinarian, or the family physician. The milk should be drawn regularly with a milk tube, if the patient cannot bear milking by hand. Inserting a concealed lance in the orifice of the teat, to open a passage by the obstructing lumps, is a dangerous practice, that cannot be recommended to lay practitioners, yet often effective in the hands of a physician or veterinarian.

Silk Culture.—The Women's Silk Culture Association, 1222 Arch st., Philadelphia, has published for distribution a pamphlet, showing the progress of this industry in America. The object of this association is to give interesting employment to those of meagre income, especially women, who would undertake the new industry. This pamphlet gives in a succinct form the progress of the societies' work of a philanthropic character. There are now over three hundred and eighty silk factories and mills in the United States; manufacturing over two million dollars worth of raw silk per annum, offering a fair field for profitable home production of the raw material. Those readers who are interested in this subject, should send for circulars as above, and read the little manual on silk, just issued by the O. Judd Co.

Slugs or Snails?—"S. P. H.," Savannah, Ga., writes: "My flower garden is being devoured by snails. I scrape up trowelfuls of them. What can I do to get rid of them without injuring the plants?" Does our correspondent distinguish between snails and slugs? The former have large shells which cover the animal when at rest, and we have never seen them in such abundance as he describes. Slugs are long and slender, with a mere apology for a shell—a small shield on their back, and are often very numerous and destructive. Hand-picking or gathering is easily done with snails; slugs may be scraped up. Placing boards here and there to afford them shelter, will aid in the capture. Sprinkling slaked lime on the soil will keep them from the plants. Ducks are very effective slug catchers among vegetable crops, but would hardly be tolerated in the flower garden.

Alfalfa or Lucerne in Michigan.—J. P. Vroman, Washtenaw Co., Mich. Lucerne succeeds in parts of New England where the climate is quite as severe as in southern Michigan. It is a perennial plant, with a very large, deep root, and should have an open, rich soil. Success depends largely upon proper establishing the plants by cultivation the first year. Land that has been occupied by a manured and well tilled crop the previous year, such as potatoes or corn, is preferable. The seed should be sown in drills from fifteen to thirty inches apart, and five to ten pounds of seed, according to the distance of the rows, sown per acre. During the first season the plant should be kept clear of weeds. A single cutting may be made the first year when in bloom, and after that three or more cuttings may be made annually.

Mushroom Beds without Spawn.—C. H. Carrington, Salt Lake Co., Utah, has heard that a mushroom bed can be made without spawn, and asks us to give directions for doing so. Mushrooms resemble other plants in this respect: we cannot cultivate and increase them, unless we have a part of a former plant to begin with. This may be a part especially designed for this use—the seed, or it may be a portion of the root, of the stem, or even a leaf. The mushroom may be propagated from a part of the plant, the spawn, which may be rudely likened to the potato-tuber, at rest, but alive and ready to grow under suitable conditions. The potato may also be raised from the true seed borne by the fruit (the balls), which succeeds the flowers. Similarly to this, mushrooms will also grow from the dark-brown dust, which they shed in wilting. Each grain of this corresponds to a seed. It is through the agency of this that wild mushrooms are scattered, though this method is rarely employed in cultivation. It is so far as known, utterly impossible for a mushroom to be grown unless derived in some manner from an ancestor. With reference to other inquiries: light is not needed; any shed, cellar, cave, or other shelter, where the temperature will not go below fifty-five degrees, nor above eighty-five degrees, will answer for mushroom culture.

Wheat and Chess.—Wm. Dinsmore, Humboldt Co., Cal., has had a discussion about wheat and cheat or chess, and the case is referred to us. There is no other question that we have been called upon to answer so many times. This correspondent asks: "What produces cheat, or is it a distinct cereal or grain of itself?" The question very neatly suggests the proper answer. Cheat or chess is produced by cheat or chess seeds, and there is not the slightest evidence that it was ever produced in any other way. Specimens have been shown of accidental entanglement, which a careless observer might accept as evidence. Others have been shown, indicating that the name 'cheat' belonged to the sender as well as the thing sent. Though rewards have been offered for proof of the change of wheat into chess, none were ever paid, for lack of demonstration that the change had occurred, or could be caused.

"Cut off with a Shilling."—Andrew Craig, Butler Co., Dakota.—Simply leaving an heir at law out of the will does not invalidate the will, but when the will is offered for probate, a presumptive heir may offer to prove that he was left out by accident, undue influence, etc. The burden of proof is on him, and not on the parties defending the will.

The specific section of the Dakota law on this subject is as follows: "When any testator shall omit to provide in his will for any of his children, or for the issue of any deceased child, and it shall appear that such omission was not intentional, but was made by mistake or accident, such child, or the issue of such child, shall have the same share in the estate of the testator, as if he had died intestate." Here it will be seen, that it must appear, that the omission was a mistake, and of course the child left out must show accident, or an unintentional omission. If, however, the testator were to have a clause inserted in his will, saying that he gives and bequeathes to his son, A. B., the sum of one dollar and no more, such a claim could not be made.

Books on Gardening and Fruit Growing in Florida.—Geo. Stowe, Volusia Co., Fla.—We do not know any work on Horticulture devoted especially to your State, save advertising pamphlets on "Tropical Fruit Culture." We publish three books intended for all the warmer States, which would answer for Florida by slightly changing the times for planting. These, in the order of publication, are: "Gardening for the South," by Wm. N. White, Athens, Ga. Includes vegetables and fruits; four hundred and forty-four pages. The next is: "Truck Farming for the South," by Dr. A. Oemler, Savannah, Ga. The author is engaged growing truck for northern markets on a large scale. Besides various vegetables, he plants watermelons and grows strawberries on a large scale for shipping. The third work is "How to Plant," by Mark W. Johnson, Atlanta, Ga. This, unlike most works on gardening, gives little attention to the multitudes of varieties of seeds, and teaches "How to Plant" with the work preceding planting, such as preparing the soil, fertilizing, etc., etc., and those that follow it, such as cultivation, harvesting, etc. Ready in a few days.

Cheap Virginia Lands.—George H. Beatty, one of our old subscribers living in Macomb Co., Michigan, writes us for information about farm lands South and East from Richmond, Virginia. He asks, is the timber of value? Is it a healthy region? What would you advise me to buy—woodland, or a farm already cleared? He wants to know if Northerners are welcome. —Our answer is, that the unpleasant feelings growing out of the war have pretty much disappeared in Virginia as in all the Southern States. Virginia invites emigration from the North and from every part of the globe. The lands are cheap. There are heavy bodies of timbered lands, which can be bought very low. Improved lands can also be bought at a low figure, especially those that are considerably run down. The editor of the *American Agriculturist*, who is writing this, visited farms along the James River within a few miles of Richmond immediately after the war, which could be bought almost as low as prairie lands in the far West, and that too notwithstanding they had been clear and under cultivation for over a hundred years. Of course lands have advanced since then, still they are remarkably low in price, and we have no hesitation in recommending our northern farmers to go to Virginia if they can find locations to suit them, and there are many. We cannot direct our farmers to any particular locality as being better than another. People having lands to sell in Virginia, would do well to describe them in the advertising columns of the *American Agriculturist*, which are widely read.

Animal Ailments.

Mange.

Put the dog on a light diet (corn bread, potatoes and milk, etc.), then make an ointment as follows: A half tablespoonful of powdered charcoal; an ounce of sulphur, and soft soap enough to make an ointment of the mixture, when thoroughly rubbed together. Rub this into the skin for three successive days. At the end of that time wash the dog clean with castile soap and wipe him dry; at the same time give internally equal parts of sulphur and cream of tartar, half a teaspoonful daily, in thick molasses.

Turpentine for Colic.

Horses frequently have colic at this season, resulting from over-exertion, unusual fatigue, too rapid eating, indigestion, etc. The best cure for colic that I know of, writes a correspondent from Illinois, is turpentine. My father heard of this remedy from teamsters that freighted goods from Philadelphia to Western Pennsylvania, Maryland, and Ohio, before the days of railroads. This freighting business occupied many men, all good horsemen, and they did not fear colic or consider it hard to cure, yet they had but one remedy—turpentine. I have used and recommended it for years, and have never known it to fail. Fill the palm of your right hand with turpentine, with your left hand raise the upper lip of the horse, and rub the turpentine against the gums and the inner side of the lip. Also rub the breast with it. Do this every twenty minutes if the attack is severe, otherwise every thirty minutes until a cure is effected.

Injured Knee.

F. Latus, N. P. R. R., has a horse that fell and injured his knee two years ago, and seemed to have recovered by rest, but every time the horse is worked hard, he goes lame again. He asks if anything can be done to effect a cure. Rest is probably the only help for the horse if he is young. Otherwise the chances for a complete cure are very small. When the injured part is inflamed and painful, washing with laudanum will afford relief; after the inflammation has subsided, try a solution of alum, or a weak tincture of iodine.

Warbles.

If during the summer months you notice the cattle running furiously about the pasture, and occasionally stopping to look for something neither you nor they can see, it is pretty certain that the Cattle Fly, or Cattle Bot (*Oestrus bovis*), is at work on their backs. This is the fly that stings cattle of all ages on the back, and deposits her eggs under the skin. In a short time a small swelling is observed, which is increased by the development of lymph and growth of the larva, and in time the grub crawls out through the orifice, which is always open to furnish the grub with air. When the growth of the larva has proceeded long enough, the best way to remove them is by gentle pressure of the fingers, just as though you were pressing the core out of a boil. Do not press hard enough to kill the grub, for then it will have to come out by suppuration, a slow process, that is exhausting to the cow. When the grubs are but partly grown, the orifice is too small for them to work their way out. With a fine syringe, inject sweet oil through the orifice, which will smother the grub and bring early relief to the cow. Some persons recommend kerosene in preference to sweet oil, but it is too irritating. Dusting the cows' backs with Persian insect powder is cheap, and offensive or destructive to most insects.

A "Forging" Horse.

Dr. John H. Jamar, Cecil Co., Md., writes us: "We suggest driving your horse barefoot, as a cure for forging. It succeeded perfectly with us. First use him very little, but gradually give him as much work on the road as usual. If his feet wear and become a little tender, put on toe-clips—"hal moon shoes," not over four inches long. He will probably not over-reach, and the forging will stop."

Lampas.

When the bars and gums of the horse's mouth swell as they often do until they rise to a level with, or even bury the teeth, they become very sore, and make it painful for the horse to eat, causing him to fall off in flesh. This trouble arises from inflammation of the gums, propagated to the bars, and is often caused by the young horse shedding his teeth, though old horses are not free from this complaint, as the teeth always continue growing in the horse. As a rule, lampas are not serious, and will pass away if the patient is put on mashes and light work. When the swelling is serious, and the above treatment not practicable, the swelled parts should be lanced, or incision made with a sharp knife. The too frequent practice of allowing the blacksmith to burn the swelled parts with a red-hot iron, is pronounced brutal and injurious by the best authorities on veterinary science. Always examine the teeth to see that something has not become wedged between them, causing the inflammation.

My Trip to the Yellowstone.

GEN. GEORGE W. WINGATE.

CAMPING.

The routine of camping was always the same, and with experience soon became rapid. During the day we would decide where we would camp for the night, the selection depending first on getting good water, and next upon finding suitable grazing for the stock. As we approached the place selected, Fisher (the guide would gallop on and reconnoiter, while we followed more slowly. We would find him waiting for us on what he considered the best spot. "Well, what do you think of this?" he would ask, as we rode up. "This is all right," I would answer. "Pitch our tent there, fronting the east; halt the wagon there, and place the table there." These brief directions given, we would dismount, throwing the reins over our ponies' heads. This is almost equivalent to tying them, as they step on the reins and hurt themselves with the curb, if they attempt to walk.

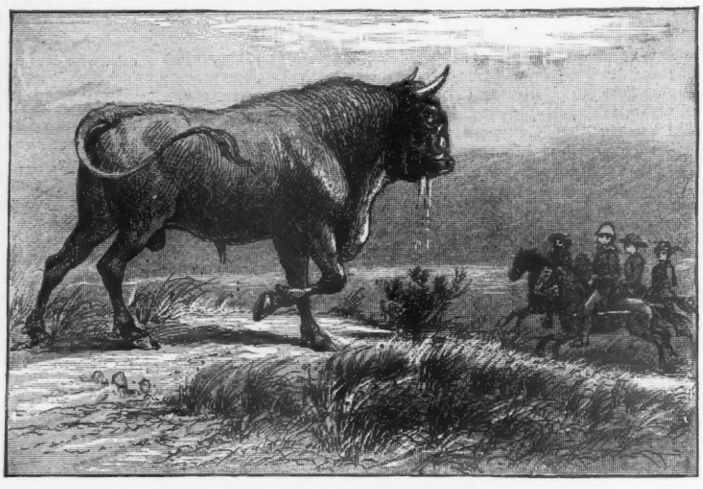
The ladies seek the nearest shade and lay themselves flat on their backs, the true way to rest (an idea which they had extracted from Mrs. Custer's Boots and Saddles), without much regard to the character of the ground, while Fisher and I would unsaddle the ponies, piling the saddles in a heap, and throwing the saddle blankets over them to air and dry. The wagon by this time would be up, and would swing into the designated position and unharness. Horace (the driver) would lead the horses to the best grass. Those most inclined to stray would be picketed, the others hobbled. In picketing, a horse is fastened to each end of a rope sixty feet long, by a bow-line knot around the throat. To the middle of this rope another is fastened, and attached to a stout stake, tree or rock. This is decidedly preferable to picketing each animal separately. The horses are more quiet in each others company, and if they do break away from the picket pin and stray off, are apt to bring up by the cross rope catching in a tree or rock. Besides, the rope makes a trail which is easily followed. In hobbling, a leather strap about eighteen inches long is fastened to each fore-leg. I prefer picketing to hobbling, as the latter affects a horse's gait.

While the horses were being put out, Sam (our cook) would start his fire and put on his Dutch oven. This was a cast-iron kettle, with a cover of similar material turned up at the edges so as to hold embers, and proved to be a most indispensable article. While it was heating, he would wash his hands with great ostentation (for the benefit of the ladies), retire into the wagon, and mix his biscuit. By the time this was done, Horace would be back from the horses. He would put on more wood, fish out and grease the oven. The dough would then be put in, the cover put on, and the whole affair placed in a bed of hot embers, which were also heaped over it. A large gridiron, two feet square, would then be set over the fire, on which the other kettles and pans would soon be simmering. Sam flying around from one side of the fire to another, with an intense air of preoccupation, and occasionally uttering a droll remark regarding his experiences in cooking under the various circumstances of his checquered life. As soon as the bread was on the fire, our tent would be put up. We first pegged the corners and put up the pins for the corner guy ropes. Then the tent was spread, one of the men crawling into it and adjusting the poles (presenting a most ludicrous appearance as he did so), raised it, tightened the corner guys and drove the other pins, and put a few stones on the flaps if the weather was cold, so as to keep the wind from blowing under it. The bedding was then unrolled, a large waterproof spread upon the ground, with two buffalo robes, and then our three mattresses placed over it. The blankets were next spread, one over each mattress, and four (?) for a cover. If the mosquitoes threatened to be troublesome, some sticks were put at the head of the beds, and our mosquito nets tied to them; but this precaution was but seldom necessary. The hand-bags were now carried into the tent, and the camp was completed, the whole operation not occupying fifteen minutes. The men had an A tent, which they only pitched when it was cold or threatened to rain. Usually they slept on the saddle blankets, and used the tent as an extra covering.

Sam would have his bread baked in twenty minutes. He would then take it out, clean out his Dutch oven, put in whatever he had to roast, and put it back into the fire. By this time the tent was up, the ladies had become sufficiently rested and would begin to either sketch or read, until the melodious banging of a tin pail, and Sam's eloquent cry of "din-nur-r," would rouse all to their feet. No one was ever late to dinner on that trip.

CATTLE AND HORSE RANGES.

All the Yellowstone country we were now traversing, up to the foot-hills, was occupied as cattle and horse ranges, and every few miles we would meet with "bunches" of cattle or "bands" of horses. Although some of the bulls had quite a formidable appearance, they seemed to be as quiet as Eastern cattle, and took but little more notice of us as we rode by them than the latter would have done. Still, the appearance of some of these patriarchs of the herd was a little appalling, as they stood close to the trail and faced our passing party, with their shaggy heads held aloft and their fierce eyes glaring at us, occasionally pawing the ground and lashing their sides with their tails.



"A PATRIARCH OF THE HERD."

The cattle did not move in great herds, but were scattered over the prairie and hills in groups of different sizes, "bunches," as they are termed here. These would vary in number from several hundred to five or six individuals, and often a single cow and calf would be met grazing alone. The horses were much more gregarious, and generally kept pretty well together. The horses appeared to be mostly bronchos (*i. e.* one-third Mustang), and were quite good sized and well formed. Some of them were very handsome, although disfigured by the large brands on their fore-shoulders, with which all were marked.

BRANDING CATTLE.

The subject of branding cattle at the West can but interest your Eastern readers. It is a matter of importance, for it is the only method of establishing title to four-footed property. Every stock owner has his brand, which is regularly recorded and is well known. It is an immense affair, as large as a frying-pan, and is burned into the shoulder of the animal. When the latter changes owners, the seller's brand is rented, *i. e.* turned up-side-down and burned on the hip, and the purchaser puts his own brand on the shoulder. Consequently, if an animal is so unlucky as to pass through many hands, he begins to look like a Herald war-map.

Every frontiersman always notes the brands upon all the stock that he meets. If you should ask one of them if he had seen a red steer with a white patch on his right eye, branded with a dot in a circle and two notches in his left ear, he would tell you he saw him yesterday forenoon with three other cattle of so-and-so's herd, near such and such a place, and you would probably find him there.

We discovered, however, that there are ways that are dark on the prairie, as well as in cities. It seemed to be generally understood that a promising steer or horse that might find its way into the herd of a ranchman, other than the owner, would be apt to be found to have acquired a new brand in some mysterious manner. It was asserted that a hot frying-pan, placed over an old brand, would obliterate it so as to render identification impossible. Croton oil, we were told, was also sometimes used for the same purpose by some cattlemen who did not shrink from stealing another's property.

It was quite a stirring sight to see a band of the half wild horses sweep over the prairie as we rode along; frequently a number of them would stand close to the trail we were following, and watch us with outstretched heads and then, as we drew near, would gallop around us with a sweep and rush which forcibly recalled Byron's Mazeppa, and which made our own horses almost uncontrollable. On one occasion when, through an oversight, my wife had been left alone in the rear, her pony was so decidedly inclined to join one of these circling bands, that she was compelled to call for help, and I had to gallop back to relieve her dilemma. Thereafter we were careful never to leave either of the ladies alone.

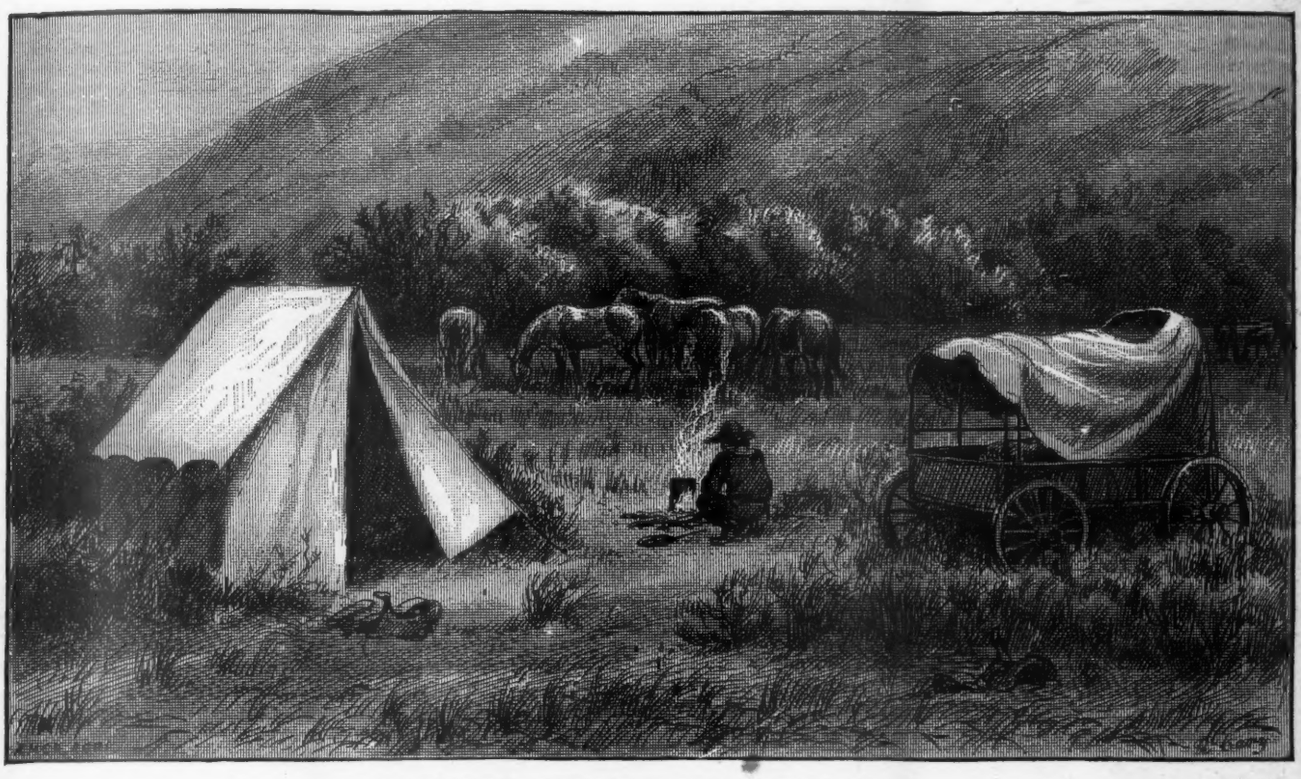
There was a cowboy with some of the bands of horses, often sitting on the ground in the shade of his horse to escape the scorching sun, but the others were without anyone to look after them. The cattle always appeared to be entirely alone, the cowboys only riding along occasionally to see that matters were all right.

AN ALKALI VALLEY.

Cinnabar Valley was emphatically the meanest country encountered during our journey. Level as a floor, baked as hard as a brick by the sun, the soil is so arid that nothing grows naturally upon it, except a little spindling sage brush, interspersed with prickly pear, averaging about one plant to the square foot. The prickly pear is a low spreading plant with broad leaves, the size of the hand, which are covered with thorns, as if a paper of tacks had been emptied on them, all with their business ends up, as I ascertained the first time I sat down on one. It has a pretty flower of all shades, from scarlet to lemon yellow, producing a rich combination of colors. To pick them one needs a pair of tin gloves, as the spines will penetrate a thick driving glove with ease. The valley also rejoiced in possessing a large proportion of alkali in the soil, which made the dust extremely disagreeable. Yet people have settled there, and at one or two ranches, where there was irrigation, we were surprised to see fields bearing quite respectable crops. Hemmed in on every side by high mountains, every breath of air was excluded, while the sun beat into it like a furnace; consequently the ride across it was extremely hot and tiresome.

STAMPEDED BY AN UMBRELLA.

The heat was so great that the ladies got out their umbrellas from the wagon and raised them, but slowly and with great care, for fear of stampeding the ponies, who were not familiar with those refinements. The horses, however, were tired and languid from the heat and their long ride, and paid very little attention to them.



CAMPING IN THE YELLOWSTONE.

Drawn (by Cary) and Engraved for the American Agriculturist.

STAMPEDED BY AN UMBRELLA.

Drawn (by Cary) and Engraved for the American Agriculturist.

As we reached the end of the valley, where the Park branch of the Northern Pacific terminates, a dashing young ranchman rode out from behind some buildings. He had a spirited horse and rode well, and he knew it. Ladies were scarce in the valley, and the opportunity of displaying his horsemanship and personal graces to two at once was not to be thrown away. So he swung his horse around and rode toward us, making his steed curvet and prance while he swayed to the motion as easily and gracefully as if in an arm-chair. While we were admiring him, a sudden gust of wind came whirling out of a cañon. It caught my daughter's umbrella and instantly turned it inside out, with a loud "crack." At the unwonted sight and sound, our horses, roused from their lethargy, simultaneously reared, snorted and bolted in different directions, and at the top of their speed. The steed of our gallant ranchman was even more frightened than ours. It ran half a mile with him, and as we last saw him he had all he could do to keep it from dashing into a barbed wire fence, whose sharp protruding points could apparently impale both horse and rider. The change from his jaunty air to that of anxiety to keep his horse out of that fence was sudden and most ludicrous. I fear his pride had a sad fall. We could do nothing with the horses until May threw away her umbrella and even then none of our steeds would approach it. As Fisher said, "umbrellas and cayuses don't agree!"

Items of Agricultural Statistics in 1885.

One of the most important volumes issued by the National Government, is the annual report of the "Bureau of Statistics," of which the issue for 1885 has very recently appeared. The volume treats of imports and exports, their value, and the particular points to which they go, or from which they come; of our commerce, and of immigration; in fact, of all the business transactions between the United States and the rest of the world. We have culled from this government publication, a few statements that will be of interest to readers of the *American Agriculturist*, and have made a careful computation as to the average valuation of the individual shipments. There is a large importation of horses, cattle and sheep to the United States, "free of duty." These, as defined by the tariff, must be for breeding purposes, whether for sale, or for owner's use, or animals owned by persons immigrating to this country, and in actual use for such immigration, or animals brought in for exhibition or competition, to whom a six months' stay is granted. Sheep and cattle sent across the border into Mexico for pasturage, may be returned free. The "dutiable" animals are those brought into the country under other conditions than those named above.

FREE OF DUTY.

	Total.	*Value.*	*Average.*
	18,521	$1,920,887	$103
Canada	3,849	976,711	254
Mexico	13,107	103,289	8
Great Britain	503	223,751	445
Belgium	39	21,748	557
France	902	589,295	595

DUTIABLE.

	Total.	*Value.*	*Average.*
	21,734	$1,371,410	$167
Canada	11,046	1,251,963	113
Mexico	10,569	111,272	10.50

The average prices in the foregoing tables, show the sources of our best breeding stock, France taking the lead, while in the "dutiable" table, the wretched condition of the "mustang" element is pointed out. The exhibit of the export of horses is curious, because it shows a larger relative average price, and in some cases a valuation far above that of any of the imported horses. The table of exports of horses is as follows:

	Total.	*Value.*	*Average.*
	1,947	$377,693	$194
Canada	1,101	201,963	183.50
Mexico	416	23,724	57
Great Britain	161	82,250	504
Germany	3	4,500	1,500
Brazil	1	2,500	2,500
Cuba	1	600	600
Hawaii	98	19,740	201

It seems, too, that while Mexico sent us horses worth eight dollars and ten dollars and fifty cents, she was willing to pay fifty-seven dollars for the specimens required to improve her stock. Brazil and Germany together, took from us four noble animals, at a valuation of two thousand five hundred dollars, and of one thousand five hundred dollars.

The returns of the imports of cattle are as follows:

FREE OF DUTY.

	Total.	*Value.*	*Average.*
	26,342	$1,176,717	$ 44
Canada	2,845	539,772	190
Mexico	20,400	259,054	13
Netherlands	1,663	133,194	80
Great Britain	936	201,972	215
Belgium	216	20,518	95

DUTIABLE.

	Total.	*Value.*	*Average.*
	78,796	$1,136,896	$14
Canada	65,445	996,341	15
Mexico	13,349	140,455	10.50

Here again the Mexican element enters to lower the average of valuation, and to take up so large a proportion of the whole number imported, particularly of those on the free list. The exports of cattle aggregate 135,890, at a valuation of $12,906,690, an average of ninety-four dollars. Of these, Great Britain is credited with 124,000, at a valuation of $12,539,000, or about a round one hundred dollar each. Of the sheep imported duty free last year the whole number was 5,492, mostly from Canada and Mexico. The most valuable were from Germany, two at one hundred and nineteen dollars each; England one hundred and eighty, at thirty-nine dollars each; and Scotland two at ninety-three dollars each. Of dutiable sheep, there were 331,117, and of these 322,339 were from Canada. The importation and exportation of potatoes were as follows:

	Bush.	*Value.*	*Average.*
Imported Total,	658,633	$255,590	$ .38
From Canada	509,447	143,105	.28
" Scotland	99,264	40,118	.44
" Br. W. Indies	33,834	73,725	2.18

These last are the famous "Bermuda" potatoes, that are so much in favor in the eastern cities, and which bring a large price.

	Bush.	*Value.*	*Average.*
Exported, Total,	380,868	$265,355	$ .69
To Cuba	173,344	130,719	.75
" Hawaii	36,337	21,049	.58
" Canada	43,492	18,448	.42
" W. Indies, S. & Cent. America, etc.	119,295	734,730	.61

Our surplus potato crop does not go far from home, but is mainly confined to this hemisphere. In the above aggregate is, however, included a shipment of 14,000 bushels to Hong-Kong, which is the contribution of the Pacific States to the European residents of that part of China.

It is interesting to all our readers to know, that there is a steady increase in the amount and value of the exportation of our agricultural products, while our population at home is increasing at such a remarkable rate. Look at the figures:

Exportation, 1860. $256,560,792.	Population, 1860. 31,000,000,
Exportation, 1885. $530,172,966.	Population, 1885. 55,000,000.

This exhibits an increase of one hundred and six per cent in twenty-five years, while population has increased about eighty per cent. Surely the farmers of the United States have no reason to complain, and every reason to take courage, in view of the commanding position they occupy in relation to the other great interests of the country. As was shown in a recent number of the *American Agriculturist*, the farms, farm implements, farm stock, and farm products of the country, exceed in value all the investments in manufacturies and railroads, together with the products of the one and the income of the other.

Yards for Brooders and Chicks.

Millions of chickens will be hatched this month. If the chorus of peepings all over the land could be concentrated so as to be audible all at once, what a concert there would be. Brooders are generally arranged to give warmth and shelter to fifty to one hundred chicks. Many who have had large experience, are entirely opposed to allowing the best hen in the world to brood her own chicks. The chicks that hatch strong and well, are removed from under the hen soon after they are dry. Their heads are greased with any soft fat, and a little is rubbed under the wings so as to be sure that no vermin from the hens attach to the little ones. Then they are placed in the brooder, under a tank of warm or hot water. The temperature of the brooding chamber should not be higher than one hundred degrees Fahr., but to secure this in cold weather, the water must be often nearly boiling. For a day or two they will not leave the brooder, and must of course have food, and water or milk, placed in the outer and lighted portion for them. If there are older chicks in the brooder, the little ones will soon run after them, and must be either shut in or watched, to prevent their getting chilled. Yards ten feet square, made with common plastering lath, or wire netting, are of convenient size, and the fence need not be higher than one can easily step over, except upon the south side, where it it is well to have a close board fence four feet high, with a roof projecting about three feet, making a little shed where the chicks can run in all weathers. The sun on fair days will strike all the ground under the roof except at near noon in midsummer, at which time part of the ground will be in shade. In the morning and afternoon, in fair weather, all the ground will be in the sunshine. When many chickens are raised, several yards and brooders are needed. The yards may be arranged for convenience on either side of a three or four foot passage, and the brooders may be placed so that their hot water ends will project into the walk for convenience of filling with water, or adjusting the lamps if the lamp-brooders are employed. As soon as the chicks get to be as large as one's fist, the door may be narrowed so that the large ones can not get into the brooder, while the little ones run easily in and out. When this is done, a box must be provided for sheltering the big chicks. It should have a pane of glass in the top, and be rather small, so that the chicks will keep one another warm. Such a box may best be placed under the shed. The birds will soon learn to occupy it, at night.

Wheat Culture in Dakota.

G. H. HOPKINS, SANBORN CO., DAKOTA.

There is a class of people in this country who turn the soil over, harrow it once or twice, sow a bushel and a half or three pecks of seed per acre, harrow again, and that ends it until harvest, and then cutting is delayed until the grain is so ripe that a large part of it shells out. These people complain when they get fifteen or eighteen bushels per acre. They might just as well raise from twenty-five to forty. First, the ground should be plowed in the fall, whether "old ground" or "back-setting," and it wants to be plowed, not "cut and covered." Then, in the spring, as soon as the soil is dry enough, it is time to commence operations. Wheat needs to be sowed in our country just as early in the spring as possible, harrowing the ground until it is thoroughly pulverized. As it is essential that the wheat should be sowed at a uniform depth, it is necessary that the ground should be rolled or "planked" before sowing. "Planking" does just as well as rolling, and as a planker (or clod-crusher, costs less, I will give directions for building one.

Take four pieces of two by four, five feet long, and saw one end of each piece beveling, like a sled runner, with a bevel about eighteen inches long; turn them over, beveled side up, and nail boards on, twelve feet long, with good strong nails, and place the center pieces at such a width apart that the wagon tongue can be adjusted to fit between them, by by boring holes for the bolts; of course the center pieces should be placed so that the team will draw from the center; then bore two-inch holes in the center pieces, two in each, one bored at an angle, and place two two-inch stakes in them; now take a board about one foot wide and bore corresponding holes in it and fit it down over them for the driver's seat, and if the driver is not heavy enough, load the planker with stones; as the soil is very loose here it will not require much of a load. As soon as the ground is harrowed, go over it with the "planker;" then take a smoothing harrow and harrow the ground over for the last time, just to loosen the soil at the right depth to receive the seed. The crop depends, as far as good cultivation goes upon the depth the grain is sowed, which should not exceed one inch. Half an inch is better if the season is not too dry at the time of sowing. With the seed-bed in the condition that such cultivation gives it, one bushel per acre is enough for seed. With such a seed-bed we not only place the seed at a uniform depth, but at a moderate depth; every seed germinates and every seed will stool in a manner that will be surprising. With the seed at an even depth, and at such a depth, the straw is not so tall and the heads will be much longer. A crop put in as I have mentioned, with a good season, and cut just before the grain hardens, will yield thirty to forty bushels per acre of "No. 1 hard."

Stable and Carriage House, Costing $1200.

ALBERT J. THOMPSON.

This design is prepared for erection on a farm or village lot, fifty feet wide; the carriage house being arranged to drive through. This feature makes it very convenient for every-day use, as well as utilizing the room. The ventilator is connected with the stable below by means of wooden trunks, and thoroughly ventilates the whole building. Each stall is drained, and the manure is dropped through the trap, as indicated on the plan, into a pit built for that purpose, and which is accessible from the exterior of the stable.

Remove top soil. Dig space for manure pit four feet deep, the size as shown in figure 2, and trenches for the brick walls to a depth of three feet below the grade. There will be no cellar.

The foundation walls are of eight-inch brick work; to start with two courses of twenty-inch work, one of sixteen-inch, and one of twelve-inch, the four footing courses to be laid in cement mortar and grouted. The brickwork of the manure pit to be laid in cement mortar. All to be of hard-burned common brick. The outside walls of the manure pit to be coped with bluestone. Lath and plaster on ceilings and walls of three rooms on second floor—two coat work. Exterior plastering as in the view given in figure 1.

Fig. 1.—VIEW OF STABLE AND CARRIAGE HOUSE.

The frame, which is made of spruce, balloon method, will require lumber of the following sizes:

Sills, 4 by 6 inches.
Studs, 2½ by 4 inches.
Corner Posts, 4½ by 6 inches.
Plates, 4 by 6 inches.
Floor Plate, or Intertie, 4 by 6 inches.
Window and Door Studs, 3 by 4 inches.
Floor Beams, 20 in. between centers, 3 by 8 inches.
Rafters, 2 by 6 inches.
Ridge Pole, 2 by 8 inches.
Tie plate for each set of Rafters, 1 by 6 inches.
Roof Boards, 1 inch, by 8 or 9 inches wide.
Two rows of 2¼ by 4 inch cross bridging for studs and beams.

The entire frame is to be sheathed with hemlock boards, and covered with good quality pine clapboards, according to the design, as shown in figure 1. The roof to be covered with shingles of best quality pine. Flash the valleys, and around the ventilator frame with tin, using cap flashing for the ridge, but cover with shingles. The exterior casings to windows, doors, and fancy work in the gables, must be of one and a quarter inch stuff.

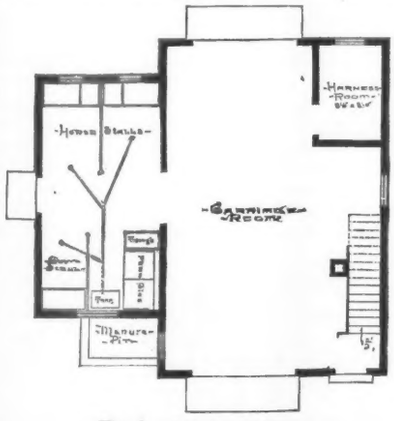


Fig. 2.—GROUND PLAN.

Provide outside shutters for five windows. Trim the ventilator with one-inch pine trimmings, and one by six inch louvres. The carriage room and the harness room, are to be ceiled with Georgia pine. The second story hall to be covered with pine boarding. The stable walls to be rough boarded.

Construct two feed bins in the stable, one and a half inch tongued and grooved pine, as shown in figure 2. Provide chutes in hay loft to mangers, and manure trap in stable. Also troughs and drains. The stalls to be one and a half by six inch spruce boards, with one and a half by six inch battens on each side, and capped with molding. Provide two six inch turned locust posts. The stairs to second story to be of spruce. The harness closet to be arranged for the reception of the fittings, which will be provided by the owner. Furnish glazed sliding door, with sheaves and brass track.

The windows of second story, and two in first story, are to have sashes hung with weights and pulleys, all sash to be one and a half inch thick. All inside doors are factory made, with four panels, and outside doors as per elevation. The three rooms in second floor, figure 3, are to have a base one by seven inches, with molding. The flooring of the first floor, is to be two by six inches; of the second floor one by six inches. The painting to consist of two coats of best quality white lead and linseed oil. The cost of this structure, completed in substantial manner, will vary from one thousand two hundred, to one thousand four hundred dollars, according to location and fluctuations in prices.

TETHER FOR ANIMALS.—A convenient tether for grazing cattle may be made by fastening a No. 9 wire from thirty to two hundred feet long between two posts set in the ground, or secured to cross-pieces. A swivel or ring is made to run on the wire, and the halter is secured to it so as to give a strip a few feet wide for the animal to feed along. This sort of tether will be found useful when cows are soiled and fed upon unfenced grass land.

Fashions on the Farm.

D. D. T. MOORE.

Our heading has no reference to the style of attire worn by the farmer and his family, but to improved modes of cultivation and management, which are of far more importance than the shape of a hat or the cut of a garment. While we would not ignore reasonable attention to dress and personal adornment, there are other matters of much greater consequence to ruralists who desire to secure prosperity, tasteful homes and pleasant surroundings. The farmer who is wide-awake and progressive — who keeps fully abreast, if not in advance of the times—wisely adopts all new styles which he finds advantageous, whether in labor-saving implements, seeds, plants, or culture. A firm believer in progress and improvement on the farm and in the household, he aims to secure the best aids and facilities for performing their labors promptly and economically, as well as comfortably. How he does this to great advantage and satisfaction (and often to the surprise and shame of slow-going, non-progressive neighbors), is no mystery to the shrewd observer. It is the natural result of intelligent enterprise, promptness, well-directed industry, and judicious management in all his operations. In fact, he achieves marked success by adopting such farm fashions as have proved, or are likely to prove, the most profitable.

"But what are these wonderful farm fashions?" is the natural inquiry of the reader. Without entering into details, we will suggestively mention a few of the spring and summer styles which may now or soon be adopted to advantage. At this season, the prevailing fashion among progressive cultivators is to obtain seeds, plants, and trees of the best varieties, from trustworthy sources, and to see that they are planted on good, well-prepared soil at the right time, and in the most approved manner. A few cents or dimes should not be regarded when deciding between a superior and a poor article, for it is almost invariably the wisest course to "get the best," whatever the extra expense. And the same is true in purchasing or engaging the services of breeding animals, it being

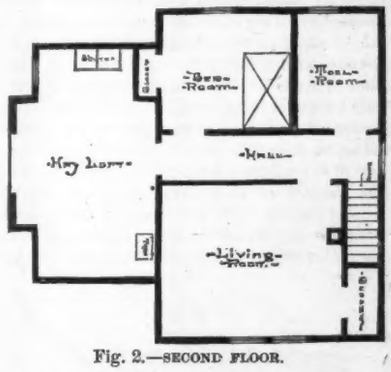


Fig. 2.—SECOND FLOOR.

good economy to heed the trite but true adage which saith "breed from the best." Fortunately these fashions are gaining favor, and it is hoped they will continuously increase in popularity.

Another spring style much in vogue among first-class cultivators is, to have all tools and implements kept in good repair, and to early procure whatever new ones will be required during the season. These matters are essential, so that there may be no delay when air and earth are favorable for operations afield. Every farmer should adopt the fashion of having all tools and machinery in readiness for use whenever wanted. Those who carefully housed their implements last fall, and repaired and painted them during winter or early spring, are of course prepared for the busy season, and need no admonition; but such as neglected this important matter will regret it in the rush of work, as their cares and perplexities will then be enhanced from lack of time, forethought and preparation. Hence, those who have been derelict should adopt a better fashion in future.

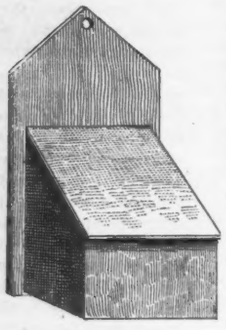


Fig. 1.

An increasing number of farmers are wisely adopting the very excellent fashion, or practice, of profitably improving the leisure of winter and rough days of spring in maturing plans for the ensuing season, and completing arrangements for active operations. They not only study rotation, but consider as to the adaptability of the soil of various fields to the raising of certain products. Having carefully considered the whole matter, and decided as to what crops shall be grown, the fertilizers to be used, the permanent improvements that may be judiciously made—in the way of orchard planting, fence making, underdraining, building, and the like—the intelligent farmer is prepared to enter upon his spring campaign promptly when the season opens, and to prosecute it with such vigor and

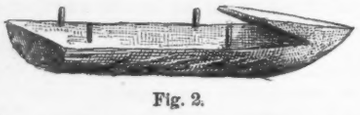


Fig. 2.

skill as usually assures good results. Though these suggestions about early preparation may be too late for this season, they are regarded as worthy "the baptism of print" for future reference.

Among the spring styles annually becoming more prevalent in many sections of the country, is the "slicking up" of farmers' door-yards, gardens, etc.—the improvement and adornment of rural homes by making of better fences, arbors, etc., and the planting of trees, shrubs, and flowers, as well as the repairing and painting of buildings and the like. This is a very laudable fashion, for it not only beautifies home, rendering its inmates more contented and happy, but adds to its pecuniary value, an item that would tell favorably should a sale of the premises become desirable or necessary. The fashion of thus fixing up about the house usually extends over the farm, so that the whole premises exhibit an improved appearance. There are better fences and outbuildings, finer orchards,

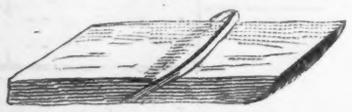


Fig. 3.

more gates and fewer aggravating bars, and other permanent improvements which tend to render the farmstead more attractive and valuable. Let this fashion prevail widely, and both the people and the country will be greatly benefited.

Several other farm fashions worthy of imitation prevail among good husbandmen, but we have not space for further enumeration. Among them, however, may be briefly mentioned the care of domestic animals, thorough and timely culture, promptness in planting and harvesting crops, the judicious marketing of farm products, the avoidance of trading with strange pedlers or traveling agents (especially those wanting autographs), and the wise style of purchasing only from persons you know, or such parties as are indorsed by trustworthy authorities.

Farm Conveniences.

Salt should be given regularly to horses, cattle and sheep, but it is rarely so given, because a supply is not kept handy for use. The box shown in figure 1, may be hung in a stable or shed, or to a tree or post in the pasture. The salt is protected from the rain, and if replenished when necessary, the stock will be supplied with regularity.

PLOW SHOES are a great convenience, and as they are cheap, a good supply of them should be kept on hand. A good one is made of a small crotch, one arm of which is cut off and trimmed as shown in figure 2. The plow-point fits in the notch, and rides upon the shoe quite easily. Another plow-shoe is made of a piece of plank,

Fig. 4.

Fig. 5.

rounded or beveled in front, and having a piece of an old harness strap or tug nailed upon it, as shown in figure 3.

A clean stable is indispensable if pure milk or good butter are desired. The manure gutter is easily cleaned out with the scraper and broom here shown. The scraper (fig. 4), is made to fit the width of the gutter, and brings the manure to the trap-door. The broom (fig. 5), is then used to sweep the waste matter from the floors into the gutter, and from the gutters into the trap-doors, leaving the floors clean and clear for a new supply of litter.

A fork for lifting stones (fig. 6), will prevent many a back-ache. It should have four prongs, which are curved so as to hold the stones, and a strong handle. By a knack in giving a quick jerk,

Fig. 6.

a heavy stone can be lifted and thrown into a wagon, and without stooping. Having used one of these contrivances to pick up stones, we can speak with knowledge of its usefulness. It is made of prongs of horse-shoe iron, welded to a heavier cross-bar, which has two strong straps to receive the handle.

SALT-TROUGH FOR SHEEP.—For the supports take two square pieces of one and a half-inch plank, fifteen inches wide, and saw notches in the top deep enough to receive the trough. Make the trough V-shaped, sixteen feet long, of boards six inches wide, using for end-boards the pieces sawed out of the plank. Let the supports be about eighteen inches long, and nail to them, one on each side of the trough, upright standards. Across these standards at the top nail two V-shaped pieces to support the roof, which is made like the trough and turned bottom up. The standards must be high enough to allow the sheep to insert their heads freely between the roof and trough, which requires a space of about nine inches.

Shearing Sheep.

Before commencing to shear sheep, a temporary floor should be provided along one side of the shed, for the shearing benches to rest upon. A portable fence should be placed across the yard, and a pen to hold a dozen sheep made at the door of the shed, through which the sheep are brought in to be shorn. This is shown in fig. 1 by the dotted lines. A sheep is kept tied in the far corner of this pen as a decoy to entice the other sheep to come in when the door is opened. Little difficulty is experienced in filling the pen if the owner has previously accustomed the sheep to eat a little corn from his hand; when corn is

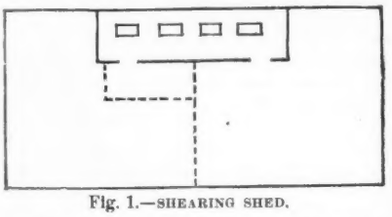


Fig. 1.—SHEARING SHED.

shown, it will quickly bring them into the pen. A habit of docility thus encouraged, is convenient in handling sheep at all times, and the little bother connected with it, is of small account as compared with the many advantages of it. Shearing benches will be found desirable, as they save the wearisome stooping over the sheep. A bench of this kind is shown at figure 2. It is made of stout strips, nailed to curved cross-pieces. These are best bent by steaming them, or soaking them in hot water for some hours, or sponging them frequently before a hot fire, by which the fiber is much softened and the wood is warped permanently. The legs are about twenty inches long. Any dust on the wool falls through the bars. The tag locks are first cut off of the fleece and thrown under the bench to be gathered up afterwards. They should by no means be mixed in with the fleece, and beginners in sheep keeping should avoid this mistake, which is too often made, even by old shepherds. The tags should be washed after the shearing is over, and rolled up by themselves. Washing the sheep before shearing, is a relic of semi-civilized times, and it is unnecessary. Frequently after the washing the weather is unfit for shearing, and few farmers are properly situated for washing sheep. The exposure in the water for hours is neither good for the sheep nor the owners, and many a farmer has contracted permanent rheumatism by it. It is one of those things which are done because our fathers did it, but circumstances are changed now, and it is not profitable. Experience during some years has shown, that the deduction made for unwashed fleeces is less than the loss of weight, without counting the labor and danger of exposure for a whole day in the water. If sheep must be washed, it is better to have a boiler arranged in the yard, with a vat, in which the sheep may be cleansed with more comfort, and no risk of injury to them or the shepherd. The shearing floor should be kept clean, and each fleece rolled up and tied neatly with twine in three places, no more twine being used, and no thicker than is necessary. The wool tables so much written about, are of little service; the fleece can be doubled and rolled up, and tied in less time on the bench than by using the folding tables, and the fleeces look better and are neater than when roughly handled up with the folding

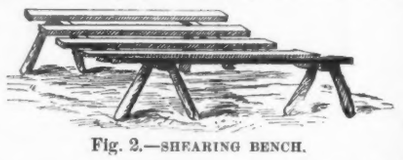


Fig. 2.—SHEARING BENCH.

arrangements. If the sheep have been cut, the wounds should be covered with tar. As the sheep are sheared, they are turned into the other part of the yard, until all are shorn, when the temporary fence is removed and the whole flock, together with the lambs, are again allowed to run together.

Methods with the Clematis.

At this time, when we say "the Clematis," we refer to that set of magnificent flowering climbers, of which *Clematis Jackmani* may be taken as the type, and which, though it has been greatly surpassed in size, in richness of coloring, substance of flower, and persistence in blooming, has not been excelled by any later varieties in this magnificent genus. While some species of Clematis are rampant growers, and will climb twenty and thirty feet high, the modern large flower hybrids rarely exceed six to ten feet. They may be easily trained along the lower part of a veranda by means of galvanized wire. A very effective method is to make a trellis by cutting a young, Red Cedar tree, eight or ten feet high. This should be stripped of its bark, and the branches shortened to make a regular pyramid from the base upwards. Of course enough of the lower part of the trunk should be left to go below ground and give it firmness. The large flowered varieties of Clematis seem to revel in such a trellis, and show to better advantage than on any other. For decorative purposes upon verandas and in halls, these varieties of Clematis, in pots or in tubs, are very effective if trained in a balloon-form. The engraving shows a Clematis trained in this manner. The frame-work of the trellis may be made of willow, though it will not last long, bamboo is vastly better, and wire is perhaps better than either. Of course, plants treated in this manner must not be neglected when at rest, but must have sufficient water to prevent their roots from drying out. Another method, which we have not tried, though it is highly commended in England, is to make use of the Clematis as a bedding plant. The stems are kept pegged down close to the surface of the soil, of course being kept confined within the outline of the bed.

The Persimmon.—(*Diospyros Virginiana.*)

WM. A. WOOD, CALDWELL CO., MO.

The Persimmon, or "American-Date," as it is called by some, is, we think, one of the most delicious of our native fruits, and deserves more attention than it has hitherto received. It grows, a wild native, in great abundance in portions of Arkansas, Tennessee, Missouri, Virginia, the Carolinas, and some others of the Western and Southern States, and is met with as far North as Michigan and Rhode Island. The tree is stately and graceful, being generally tall and straight, with symmetrical branches, covered with dark-green foliage. It sometimes attains a hight of fifty or sixty feet, but is usually only about thirty feet high. The trunk is commonly from six to ten inches in diameter, though we have seen very old trees which were more than a foot in diameter three feet from the ground. The fruit is nearly round, slightly flattened at the ends, and is from an inch to an inch and a half in diameter when fully grown, and when ripe becomes of a bright yellowish-brown color. Except in the extreme South, the fruit does not become palatable until after it has undergone a heavy frost or two, as before that takes place, it is hard, sour and astringent. In many of the Southern States, a kind of beer is made from the ripe fruit with the assistance of hops, and, by those who use it, is said to be a very pleasant beverage. However this may be, we are able to vouch for the fine flavor of the fruit after Jack Frost has "slightly tinted its cheek with brown." The Persimmon which is readily propagated from cuttings, can be successfully cultivated in most parts of the United States, and forms a beautiful tree, exceptionally free from insects. It is an ornament to the orchard or lawn; with Mr. A. S. Fuller we hope to see it receive more of the care of the pomologist in the near future, and we are sure the result of cultivation will amply repay the labor bestowed upon it.

CLEMATIS IN POT.

The Plumy Asparagus.

The florists who grow flowers for the bouquet-makers, often also grow plants which will furnish foliage that will make up with the flowers. A large share of the green used by the bouquet-makers and floral decorators, is a wild club-moss (*Lycopodium dendroideum*), known in the trade as "bouquet green." Among the plants of recent introduction that furnish excellent green, are several species of Asparagus from the Cape of Good Hope. The common garden Asparagus is in common use for large bouquets in summer, but these new kinds are far more delicate and beautiful. The Plumy Asparagus, *Asparagus plumosus*, was introduced about ten years ago, a climbing plant of great beauty; since this came into cultivation, the Cape has furnished a dwarf variety of it, *A. plumosus nanus*, which does not climb. This, as will be seen by the engraving, has much the aspect of a fern; for bouquets and other floral work, this Asparagus is superior to any fern. It is said to retain its freshness if placed in water, for three or four weeks time.

THE PLUMY ASPARAGUS.

Alfalfa in Colorado.

An enthusiastic communication from Mrs. O. Wright, of Arapahoe Co., Col., regarding alfalfa, thus sets forth the merits of this excellent forage plant under the system of irrigation there prevalent:

Alfalfa was sown in Colorado, for the first time, eight years ago, and already there are thousands of acres under cultivation. Generally it produces three crops a year, averaging two tons per cutting, and then furnishes excellent and late fall pasturage, as it is not easily injured by the frost. Some cut the fourth time, but three crops keep the ranchmen on the jump all summer. One ranchman said, "If he was going to put in alfalfa, he would buy his coffin at the same time he did his seed, for the harvesting of it would be the death of him by the second year." The natural rain-fall will never develop wonders with this forage plant, but irrigation, with our almost continual sunshine and intense heat, form a combination which develops itself in alfalfa, which, in turn, yields the best dairy products, beef, mutton, pork, poultry, etc.

This region, the western edge of the Great American Desert, which lies under the evening shadows of the Rocky Mountains, will yet produce the greatest "milk record," and "speed," of any agricultural country. Why? Because the feed is the best for developing the highest quality and large quantity of milk, and in addition, the light, stimulating atmosphere causes an assimilation of more of this rich feed than is the case at lower altitudes. Then the wash from the mountains, which has been coming down upon these plains ever since the hills were lifted skywards, has formed a soil of infinitesimal particles of disintegrated rock, a soil of unsurpassed richness. The light air increases the size of the lungs, and with bones and lungs peculiarly developed by this region, who will deny that in the near future the "Alfalfa of Colorado" will rival if not excel the celebrated "Blue Grass of Kentucky."

Neglected Grape Vines.

In pruning old, neglected grape vines, the principal object should be to induce young growth which in time is to take the place of the old, straggling, barren wood. This cannot all be accomplished in one season, and while one part of the vine may be cut back severely, the other should be but little disturbed. The following year, the latter should also be cut back or removed entirely. Where space permits, layering is sometimes preferable to this plan. One of the most vigorous main branches—after all its side growth has been removed—is bent down to the ground, with the end over the spot where a new vine is desired. Here a hole of about six inches in depth is dug, the vine bent into it, fastened with a hooked stake, or a stone, and covered with soil, except the terminal shoot which is tied to a stake. After a year or two, the layer will be sufficiently rooted so that its connection with the parent plant may be severed. But all this is only advisable when the vine is of a satisfactory variety; otherwise it would be throwing away time and labor to try to perpetuate the worthless thing. In such a case the wisest plan is to dig up the old vine and to plant a young one of a better variety, and the sooner this is done after the frost leaves the ground, the better. The pruning, should also be done early in order to avoid bleeding, which, if not injurious to the vine, is very unpleasant to see.

The Long-Flowered Tobacco.

A friend was quite enthusiastic in his praise of the "Star Petunia," and was surprised that we were not familiar with what was to him so common a plant. A specimen of Star Petunia proved

Fig. 1.—LONG-FLOWERED TOBACCO.

it to be the "Long-flowered Tobacco" (*Nicotiana longiflora*). This really handsome annual, though it has been long in cultivation, is less common than many plants of more recent introduction. The plant grows two feet or more high; when several are used together to make a mass or clump, the effect is very pleasing. The flowers (fig. 1), have a tube about four inches long; the limb, or spreading portion is star-shaped, and of a remark-

Fig. 2.—COMMON TOBACCO.

ably pure white. The flowers, which open towards night, are produced in great abundance, and make the plant very effective, especially if massed upon the lawn. The common tobacco is a rather stately plant, and is sometimes seen in the flower garden, more as a curiosity than an ornament. Its flowers (fig. 2), are very unlike the other in shape, and of a dull, light-purplish tint.

Sweet Potato Culture.

From the latter part of May, to July 4th, the rooted sweet potato sprouts should be transplanted to the field or garden. Break the land thoroughly, but not necessarily deep; low, level and damp lands will not do; high, dry, mellow or loamy soils are best, and the fresher the better. Lay off rows three and a half to four feet apart, and in these furrows, apply two to four hundred pounds of ammoniated superphosphate containing potash, per acre. If home-made manure is used, be sure that it is old and thoroughly decomposed, and if possible mix some ashes and acid phosphate with it. Cover this furrow by running on each side of it with a one-horse turn plow, thus making a narrow ridge, on which plant the slips eighteen inches apart; keep clean of weeds and grass until the vines begin to run freely, then hill up and lay by. It is as well not to permit the vines to take root between the rows, as this will diminish the crop. Loosen up the vines occasionally. A fork hoe is good for the purpose. Just before or soon after the frost in the fall, dig the potatoes and store away in a dry, warm place for winter. In the South, a good way to do this, is to select a spot on the ground where water will not stand, and throw up the earth three or four inches above the natural surface, in a circular shape about four or five feet in diameter, press down firmly, and on this place twenty-five or thirty bushels of potatoes piled up in a cone-shape, sharp at the top, cover with corn stalks or grass two or three inches thick, then cover with earth six or eight inches deep. Place a few boards over the top to keep rain out. Make as many of these banks as you please. In the Northern States it is advisable to store in some good, warm, dry cellar. Leave the top of the bank open a day or two, as the potatoes will sweat somewhat when first banked; after this cover up entirely. Be sure to keep them warm. The vines make very good cattle feed. Most of the cultivation may be done with a plow. M. W. J.

Smilax—Myrsiphyllum.

One of the most popular of all decorative plants, is a climbing vine, the so-called Smilax, which is not a Smilax at all. Its proper name is *Myrsiphyllum*. which is derived from Greek words, meaning "Myrtle-leaved." It has a delicate, thread-like, twining stem, which bears abundant, firm, bright, shining, dark-green foliage, which retains its shape and color a long time after the stem is cut. Its permanence especially adapts it to the decoration of ladies' hair, the ornamentation of their dresses, as well as to the festooning of apartments. It, for all these uses, retains its freshness in the most satisfactory manner, and has become one of the most popular of decorative plants. The plant, which was first cultivated in the vicinity of Boston, was for a long time known to the New York florists and plant dealers as the "Boston Vine." It was in common use by the decorative florists in this country, before it came to be generally known in Europe. They have now learned its value, and it is largely cultivated abroad. We gave, several years ago, an engraving showing the habit of the plant, and the form of its foliage, which is at present repeated in every florist's catalogue that comes to us from Europe. We now give an engraving showing branches of the plant in flower. We mentioned above the "foliage" of the plant—not its leaves. This was intentional, as the leafy portion of the plant is not made up of real leaves. The true leaves are mere scales, situated close to the stems, from the axils of which are produced branches, which are flattened and have the general appearance of leaves. The same is the case in asparagus. What pass for the leaves of that plant, are really green stems, produced from the axils of small scales, which are the true leaves.

So great is the demand for "smilax," especially in winter, that commercial florists have large houses devoted solely to its culture. The stems run upon strings placed perpendicularly. Our special object in calling attention to the plant at the present time is, to state what is not generally known, that it is a capital window plant, in order that those who wish to do so, may provide in season for their window gardens. It does not require direct sunlight, and may be usefully employed to decorate a shaded window, and may also be used to run over picture frames, etc. The tuberous roots may be procured from florists, or the plants may be raised from

SMILAX—NATURAL SIZE AND REDUCED.

seeds, which are now offered by the principal seedsmen. The seeds are slow in starting, being often three or more weeks, before the young plants appear. When large enough to handle, remove the young plants to three or four-inch pots, one in each, or to a row in a window box. As soon as the vines begin to run, supply them with strings to which they may cling. The vines should be cut once a year, the roots being given a rest of about six weeks by drying off the root; they may again be started by watering, and giving them a warm place.

New Zealand Spinach.

The heats of July and August are too much for spinach, which, if it does not run to seed, grows slowly, and is without the succulence that it has in the earlier months. While spinach is in perfection, one wants nothing better, but it is well

NEW ZEALAND SPINACH.

to prepare for the months when that can not be had, by sowing seed of the New Zealand Spinach. This plant is not at all related to the true spinach, but belongs to the same family with the Ice-plant. The plant grows very slow at first and makes but little show, but as the heat increases, the better does

this New Zealander like it, and after it has made a fair start, it goes on at an astonishing rate, branching and spreading in every direction. The engraving gives the manner of branching, and the shape of the leaves. The seeds are rather slow in starting, and if one has the conveniences for doing so, it is well to sow the seeds in pots; after the seeds are up, thin, leaving but three or four plants in a pot. Make well-manured hills, six feet apart each way, and turn out the ball of earth containing the plants, and set it in the center of the hill. The seed may also be sown in drills, which should be three feet apart. Sow thinly, and when the plants are up, thin to a foot apart. The leaves are to be gathered for use, leaving the ends of the branches uninjured. It is used in the same manner as spinach.

The Rarer American Conifers.

JOSIAH HOOPES.

Many years of experiment with the Coniferæ of the Pacific Coast, has resulted in very general failure throughout the Atlantic States. The few instances of success are due in a great measure to peculiar atmospheric influence, and not as some suppose, to certain favorable conditions of the soil. On the other hand, they succeed in the mild, humid climate of England with gratifying results. Our eastern cultivators however, have their reward. The trees of Colorado peculiar to the Rocky Mountain Chain, are not affected by fungoid diseases when grown in their new homes in the Middle and New England States.

Perhaps the most important addition to our list of available lawn trees for many years, is what has been aptly termed the Colorado Silver Spruce (*Picea pungens*). This very attractive evergreen, although unknown to cultivators until within a very short time, is rapidly becoming the most popular species in the entire list. It forms a large-sized tree, from one hundred to one hundred and fifty feet in hight, and for many years retains its compact habit, and conical outline. The characteristic charm of the Silver Spruce, however, consists in its very distinctive silvery-glaucous tint. This feature is not found in every specimen, as the color varies from almost white to a bright green. It is a tree which seems to embrace every element of perfection for ornamental planting, and is destined to rank at the head of all Conifers, whether native or foreign.

The Colorado form of the Douglas Spruce (*Pseudotsuga Douglasii*), although not so extensively

Fig. 1.—NEMOPHILA INSIGNIS.

tested as the above, has so far proved quite reliable at the East, and yet the Pacific Coast plants are untrustworthy here. The peculiar dark, green foliage, fine spiral form, and graceful disposition of its branches, will cause the Colorado Douglas Spruce to be exceedingly valuable to the landscape gardener, for creating rich effects in colors and forms.

Abies concolor, from high elevations on the mountains of Colorado, is another example of climatic influence on conifers. This tree, long supposed to be merely a Rocky Mountain form of the *A. grandis*, was determined by Dr. Englemann, to be a distinct species. It is the long-leaved plant of our nurseries, known under the various synonyms of *A. lasiocarpa*, *A. Parsoniana*, *A. Lowiana*, etc. Unlike its

YELLOW GENTIAN.

prototype, *A. grandis* of the Pacific Slope, this species is rarely injured either by the cold of winter, or heat of summer, when in cultivation with us.

The Rocky Mountain variety of the *Pinus ponderosa*, Heavy-wooded Pine, is a strange anomaly to the evergreens of the Colorado region. This form, called by Dr. Englemann var. *scopulorum*, retains the peculiar destructive leaf-rust, so fatal to the species from California and Oregon, and may not be grown with any great certainty of success on our eastern lawns. Occasionally we find specimens thriving for a few years, but they are doomed. A limited experience with other Rocky Mountain pines, has proven their adaptability to our climate, and although not specially ornamental in character, they are interesting, and afford a well-marked contrast. Prominently in this connection, might be mentioned such species as the small *Pinus edulis*, *P. Balfouriana, var. aristata*, *P. contorta, var. Murrayana*, and *P. flexilis*. Trees grown from Rocky Mountain seeds of all these, have done well at the East.

The Love-Groves—Nemophilas.

Among the many annual flowers that California has afforded to our gardens, none are so delicately beautiful as the Nemophilas. The meaning of the botanical name, *Nemophila*, is "Lover of the Grove," a name which indicates that the plant likes shade. If sown in the open border, they are short-lived and soon wither away in the mid-summer sun. If they can not have partial shade, it is of little use to sow them in the open ground. It was the writer's good fortune to first make the acquaintance of these plants in their native haunts. A shady, moist nook, completely carpeted by the showy Love-grove (*Nemophila insignis*, fig. 1), with its flowers of a peculiarly delicate shade of blue, remains, after many years, as one of the most pleasing memories of that land of flowers. More striking, but not more beautiful, is the Spotted Love-grove (*N. maculata*, fig. 2), with larger flowers, each white petal bearing a distinct purple spot. There are other species in cultivation, and the first-named kind has given several striped and spotted varieties, none of which, in our view, are equal to the original. The Nemophilas are capital plants for pots and boxes, and if one can give the needed shade, they can thus be grown in perfection. When these and other annuals are grown in pots, we are apt to crowd them; by giving them more room, the plants will last much longer, and their bloom will be much more satisfactory. The Nemophilas have weak, slender stems, which trail over the sides of a pot or a box in a pleasing manner. The seeds are kept by all the seedsmen.

The Yellow Gentian.

We are so accustomed to associate the name of Gentian with the most intense and beautiful of blues, that it appears like a misnomer to speak of a Yellow Gentian. Yet there is a Gentian upon the mountains of Middle Europe, with flowers so yellow that they have given the name to the species, which is *Gentiana lutea*. Not only does this differ from most other Gentians in the color of its flowers, but it is a most stately species, growing three to four feet high, with the habit shown in the engraving. The numerous yellow flowers are produced in whorls at the upper joints of the stem. This species has a commercial importance; its root is the Gentian used in medicine. It is found growing in the mountain meadows of the Alps, at an elevation of three thousand to six thousand feet. In these localities the root is collected by the Swiss peasants, who dry it and sell it to dealers. The Swiss have discovered that the root contains a form of sugar, that by fermentation will yield spirit, and that this use of it, together with its consumption in medicine, has led to the almost complete extirpation of the plant in parts of Switzerland, where it formerly abounded. The plant has been found to grow readily in England, and would no doubt succeed in this country, should it ever be found desirable to cultivate it.

Covering Seeds.

The proper covering of seeds, after they have been deposited in the drill or row, has much to do with the success of the crop. If in covering, the seeds are buried so deep that the germ (the little plant within the seed) can not reach the surface, it dies. Though the seed may have been perfectly good, there will be no crop. Among the various devices for covering seeds in the field, one of the best is made of strong, tough timber, one inch thick, about eighteen or twenty inches long, and six inches

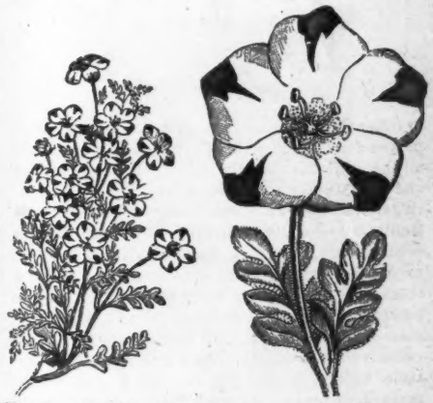


Fig. 2.—NEMOPHILA MACULATA.—BRANCHLET AND FLOWER.

wide, slightly curved underneath. This board may be attached to any common single one-horse plow stock, by using the same heel bolt that is used for fastening on the plow steels. When the soil is fine and free from rocks, stumps, etc., this board covers beautifully by running it over a furrow in which cotton seed or corn has been dropped or sown. If the soil be of a tenacious nature and liable to bake or harden after a rain, it is not best to use this board, but in its steada two-pronged or forked plow.

THE HOUSEHOLD

A Variety in Food Desirable.

LUCY R. FLEMING, VA.

All are agreed, that neatness and good bread are absolute necessities in housekeeping. But in some homes, faultless in order and purity, where the weekly or daily baking shows only sweet, light loaves, puffy rolls, or crisp, delicious biscuits, there may be such a dreary sameness of fare, that one wickedly grows to sympathize with the murmuring Israelites over the everyday manna. In planning variety for the family table, the housekeeper is also studying not only the pleasure, but the health of the household for which she provides. It is not enough that wholesome food be set forth, but such is the relation between palate and stomach, between taste and digestion, that variety in foods is both agreeable and needful. Farmers, poulterers, all stock-raisers recognize this fact in providing for the creatures under their care. Then why should house-wives set forth such monotously unvarying, or at the best such slightly varied meals during the three hundred and sixty-five days of the year? And it is the more surprising when really, there are few work-shops in which so much variety can be brought to pass as in the kitchen. Often a sickly, waning appetite can be stimulated by some exceedingly simple change in the commonest articles of daily food. Slices of dry bread are uninviting; but the same bread, lightly browned, with a delicately poached egg resting on the crisp toast, becomes altogether another item in the bill of fare. Cold beef or mutton have become standard dishes for wash-day

ORNAMENTAL MILKING STOOL.

or other slim dinners. But an accompaniment of pickles for the one, and jelly for the other, makes all the difference in the world between tasteful and bald utilitarian housekeeping. Oat-meal porridge is a most excellent breakfast dish, yet it is well to occasionally substitute in its place berries or other fruit, or even a change to Pearl hominy, or cracked wheat, or corn-meal mush. I know there are forty different ways in which to prepare potatoes, and should not be surprised to learn that there may be fifty, yet how few are the tables, especially in the country, where one sees this vegetable except in the stereotyped boiled whole, mashed, or fried. A great variety of delightful dishes can be made with apples at all seasons of the year, whether one has fresh or canned fruit. Breakfast, dinner, or tea need not lack a healthful relish if one has a dozen or so of apples within reach. I do not enumerate the host of what are known as "made dishes," which can be so quickly and easily concocted out of remnants. I admit, that forethought and planning are necessary in order to secure a pleasant variety for the table, and the task is not always easy, when the housekeeper is herself weary and out of appetite. But if it be our duty to cater for the appetites of others, it is worth the trouble to set on the family table—not courses of elaborate dishes—but a wholesome, agreeable, and yet economical diversity of food.

Little Girls' Aprons.

The prettiest apron worn now by little girls of from six to twelve years of age, is so simple in design that any one can make it without a pattern. It consists simply of two straight breadths of Nansook or of plain goods, gathered on a strip of needlework, which form a little yoke. Arm-holes are cut as shown in figure 1, and strings made of the same

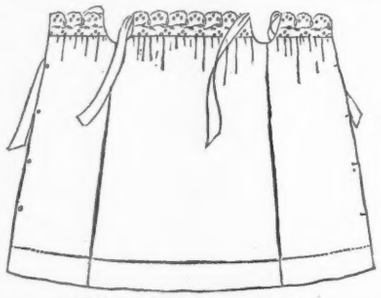


Fig. 1.—GIRL'S APRON OPEN.

material as the apron, are sewed on each side of them, and tied in bows on the shoulders, as seen in figure 2. The new material called Persian dimity, which is sheen and beautiful, looks very pretty over dark dresses, and is well adapted for this purpose. It may be purchased for twenty-eight cents a yard.

An Ornamented Milking Stool.

Who would think upon seeing a milking stool as it stands in the barnyard, that it could be made into the prettiest imaginable little seat for the parlor? Well, the change has been made, and can be made again, by any one who wishes to do so. Paint the legs of the stool black or gild them. Cover the seat with a piece of an old comfortable first, then with some fabric that is bright and pretty. A bow of ribbon is fastened at the top of one of the legs; a smaller bow near the bottom of another leg, with the ribbon looped between them. A stool for ornamenting can be purchased at the agricultural warehouses for a small sum, which, after it is upholstered, will appear to be worth several dollars.

Cooking Vegetables.

SPINACH.—Spinach is the best of all greens, and what we say about this, applies to all other vegetables used as greens. Properly cooked, spinach is a most welcome vegetable in spring, but as often served, this, and other greens, are most indigestible. It is a common notion that greens of all kinds must be cooked with meat, hence they are boiled with a piece of salt pork, or of corned beef. When done the greens are taken up, im-

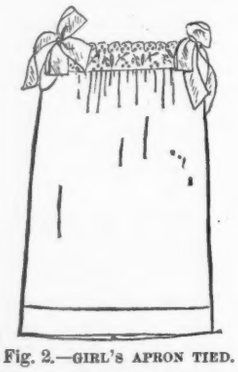


Fig. 2.—GIRL'S APRON TIED.

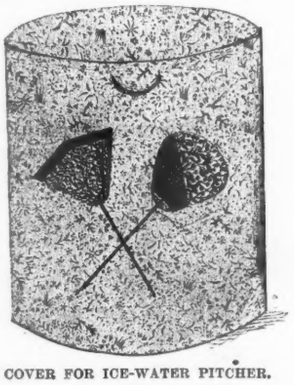
perfectly drained, and served. Thus treated, each leaf is covered with a film of grease, and no matter how much it may be drenched with vinegar, is most indigestible. Spinach, and all other greens, should be first thoroughly washed, and then plunged into boiling water which is slightly salted, and cooked, with the pot uncovered, until done quite tender. The covering of the pot causes the spinach to lose its green color. When done, the spinach is placed upon a colander to drain, and while there, chopped fine, unless, as some prefer, the chopping is done before it is put into the boiling water. When the spinach is well drained, and fine, place it in a sauce-pan with a lump of butter, with a little salt, heat up and serve. Some add a very little nutmeg, but our own preference is to omit this.

CARROTS.—It is strange that carrots are so little used in this country as a table vegetable. Cooked in the following manner, they are always welcome upon the table of the writer. The roots are first scraped, then cut cross-wise into slices, about a quarter of an inch thick, the slices are then cut across to form small pieces or dice, which are then stewed in water until tender. A sauce is then made by adding salt, butter, flour, and milk, sufficient to cover the pieces of carrot. A very slight addition of Cayenne, gives the sauce a piquancy acceptable to most persons. If those who have never tried carrots treated in this manner, should do so, they will be very apt to repeat it.

STEWED CELERY.—In preparing celery for the table, reserve the outer stalks, not sufficiently blanched, to be eaten raw. Clean them thoroughly, and cut them into pieces half an inch long. Stew these pieces in water until quite tender. Drain off the water, add butter, a little flour, and sufficient milk to make a sauce to cover the celery, besides salt and pepper. Heat up to boiling and serve. We should not be surprised if, after one trial of this, the entire heads of celery should be treated in the same manner.

To Keep Ice-Water.

By surrounding the pitcher with a non-conducting covering, ice-water may be kept cool for a long



COVER FOR ICE-WATER PITCHER.

time. The contrivance here shown is made of heavy brown paper, interlined with three layers of cotton batting. A piece is made to fit around the pitcher, and a round piece fitted in the top of that; these are overhanded together. A cover is made to slip over this of a pretty pattern of sateen; some appropriate design can be selected, or it can be made of a plain color, and ornamented to suit the taste. Handles made of picture-cord, are drawn through each side to lift it up by.

Some Good Recipes.

EGG SAUCE FOR PUDDINGS.—Beat up the yolks of six fresh-laid eggs with six heaping tablespoonfuls of powdered loaf sugar; add a half pint of good cooking wine. Put the mixture in a small pitcher, place this in a saucepan full of boiling water, and froth up the sauce for about ten minutes with a chocolate mill.

TOMATO PUDDING.—Peel the tomatoes, allowing two quarts for a one quart baking dish. By scalding tomatoes for a few seconds in boiling water the skins peel off without the least trouble. Cover the

bottom of your dish with bread crumbs, over them place a thick layer of tomatoes, seasoning highly with a sprinkling of sugar, pepper, and salt, with small pieces of butter dotted all over. Add more bread crumbs, tomatoes, seasoning, etc., until your dish is full, pouring a half-teacupful of water over the whole, and a layer of finely grated bread crumbs. Lastly, beat up two eggs and pour over the top. Bake twenty minutes in a well heated oven. Canned tomatoes will answer perfectly, in winter, for the composition of this dish. It is to be eaten as a vegetable, not as a dessert.

COUNTRY SAUSAGE.—To eighteen pounds of lean pork add nine pounds of fat, two ounces of powdered sage and four ounces of black pepper. Salt is added to the taste. One might safely begin with one pound for this quantity. Knead the mixture well together, after grinding fine in a mill, and fry a small cake, to see if it is rightly seasoned. More salt can then be added if needed.

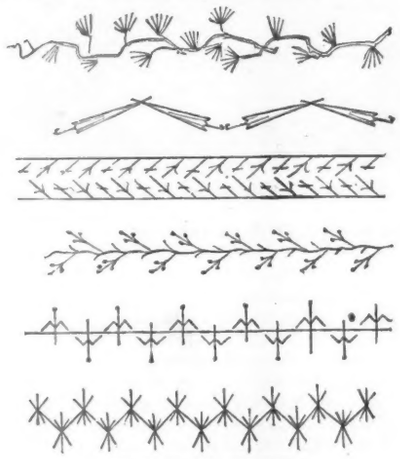
CREAM MUFFINS.—One pint of cream, one pint of flour, a half teaspoonful of salt, and a quarter of a teaspoonful of soda. Add three eggs beaten separately, the whites to be stirred in last. If the cream is sweet put in also a half teaspoonful of cream of tartar. Bake, in small patty-pans, in a quick oven.

APPLE FRITTERS.—One pint of milk; three eggs, a saltspoonful of salt and a pint of flour, sifted. Beat the whites and yolks separately. Add the yolks to the milk. Stir in the whites, and then screen in the flour. Have a skillet, two-thirds full of boiling lard, and on each spoonful of batter lay a slice of some good cooking apple, cut very thin. Drain your fritters on an inverted sieve before sending them to table, for, to be nice, they should be entirely freed from the grease in which they are fried.

A GOOD PLAIN SAUCE FOR FRITTERS.—Take a half pint of some well flavored molasses or syrup, and heat over the fire in a sauce-pan until it reaches the boiling point. Let it simmer a few minutes to thicken, and add any flavoring you prefer. A little lemon juice and rind are very suitable, or a very little of powdered cloves. Just as you are ready to send the sauce to table, stir in a little cooking soda on the end of a spoon or knife, and beat up the whole until it foams nicely. Serve in a pretty little pitcher or bowl of china or silver. If in a bowl, a small ladle is required, with which to help out the sauce.

Fancy Stitches for Crazy Work.

The mania for crazy work appears to be on the increase. It is not only made into quilts, but is

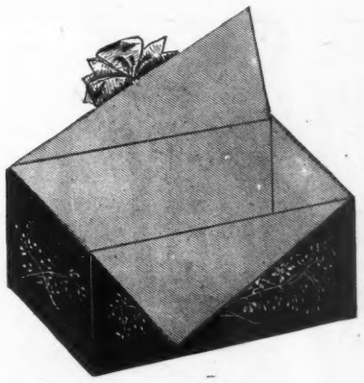


CRAZY WORK STITCHES.

used for upholstering chairs, piano stools, and foot rests. We here illustrate a few stitches, that can be readily copied by those accustomed to work of this kind. It is a common mistake to make the stitches too fine; they are much prettier and more effective when made coarser. The Persian, or Oriental embroidery, mingled with crazy work for a change, has a very pleasing effect. It is made by cutting ancient designs out of different colored felts and velvets, and appliqueing them on the larger pieces of silk, with a quantity of bright-hued silk. Any design can be procured from papers or magazines, with the aid of tracing paper, and in that way you will have your pattern free from any expense, and will have pleasure in seeking out odd designs.

A Box for Photographs.

This idea of the photograph box, here shown, originated with a young lady who did not have an album for displaying her photographs. With the



BOX FOR PHOTOGRAPHS.

aid of some old white silk and satin ribbon, which she dyed a lively shade of pink, and some pieces of brown velvet, she made as pretty a case for photographs as one need desire. The foundation was made of pasteboard; the pieces for the bottom and lid are cut seven and a half inches by five and a half; the sides seven and a half by two and a half. The ends five and a half by two and a half. The lid is cut in two, diagonally. A layer of cotton sprinkled with sachet powder, is basted on one side of each of these pieces; then they are covered on one side with silk, and the other with velvet or plush; the edges are turned in, and they are overcast together. The parts are then joined to form the box by overhanding them neatly together, with silk the color of the velvet. The lid must be sewed on the outside, to keep it from falling in. A large bow of ribbon is sewed on one-half the lid. A little painting can be added to the outside, if one is accomplished in that art.

Knitting and Crochet.

EVA M. NILES.

The revival of this old-time work seems to prove that woven goods can never entirely supersede hand-work, which is far more durable. Dainty laces, as filmy as the imported ones, are now knitted here on steel needles, and undergarments of wool are also made by hand. For the benefit of those who do not understand the terms in knitting, the following glossary is given:

To cast on.—To make the first interlacement of yarn upon the needle.

To bind off.—Knit two plain stitches, then bind the first over the second and so on to the last stitch, which is fastened by drawing the yarn through.

To purl or seam (both words mean the same).—Knit a stitch with the yarn before the needle.

To widen.—To increase by making stitch, bring yarn around needle; called by some old knitters, turn over once, turn over twice, etc.

A row.—The stitches from one end of the needle to the other.

A round.—To knit when the stitches are on three or more needles.

A plain row.—To knit garter stitch.

Twist stitch.—Like plain knitting, only the needle should be put in the back of the stitch, after which knit as usual.

The following makes a pretty edging for underwear, aprons, etc.

WHEEL LACE.

Cast on eleven stitches, with No. 36 spool thread, and two No. 17 or 18 steel needles; knit across, plain, once. First row, knit seven plain stitches, make two stitches, narrow, knit two plain stitches. Second row, wind thread around needle once (this makes an extra stitch), seam two together, two plain, seam one, seven plain. Third row, five plain, narrow, make two, two plain, make two, three plain. Fourth row, wind thread around needle once, seam two together, two plain, seam one, narrow, one plain, seam one, six plain. Fifth row, five plain, narrow, make two, narrow, two plain, make two, three plain. Sixth row, wind thread around needle once, seam two together, narrow, seam one, two plain, narrow, seam one, narrow, four plain. Seventh row, six plain, make two, narrow, narrow, make two, three plain. Eighth row, wind thread around needle once, seam two together, narrow, seam one, narrow, one plain, seam one, narrow, four plain. Ninth row, seven plain, make two, narrow, make two, three plain. Tenth row, wind thread around needle once, seam two together, narrow, seam one, narrow, seam one, narrow, five plain. Eleventh row, eight plain, make two, narrow, two plain. Twelfth row, wind thread around needle once, seam two together, narrow, seam one, narrow, six plain. Commence at first row and repeat.

KNITTED DIAGONAL STITCH PURSE.

Cast on with Corticelli purse silk, and two No. 18 steel needles, any number of stitches that can be divided by three. First row, make one, slip one, two plain, pass slipped stitch over the two stitches which were knitted plain; repeat to end of row. Second row, all plain knitting. Third row, knit two plain before beginning pattern, then repeat first row. Fourth and fifth rows, like third. Sixth row, like first. Knit till you have the desired length. Sew together, leaving open space in middle. Trim with steel trimmings.

A Useful Crazy Screen.

Although screens are associated with winter, they are quite as useful in summer. They serve to conceal the fire-board, after the stove has been removed. Then they are very convenient for shading the eyes while taking a nap on the lounge. Every lady will know the manner in which the screen, illustrated below, is made, and what fascinating work it is. [Since the National Crazy-work Fair, held in New York City a few weeks ago, the popularity of this work seems to be on the increase.] The frame

A HANDSOME SCREEN.

for the screen can be purchased ready-made, but one that will answer every purpose is constructed out of a small clothes-horse, and stained to imitate ebony or rose-wood. The design is worked on a foundation of muslin, out of silk velvets and fancy ribbon, and lined with sateen of an old-gold color.

BOYS & GIRLS' COLUMNS

The Battle of the May.

AGNES CARR SAGE.

"Hip, hip, hooray! its the first of May, and a holiday!" shouted Tom Carlton, springing briskly out of bed, while up from every cot in the long dormitory popped a black, brown or flaxen head, and seven pairs of sleepy eyes gazed stupidly at the patch of sunshine on the white wall.

"Don't feel much like spring," muttered Charlie Allen, cuddling down again, beneath the blankets. "It will when summer has settled old winter's goose for him," said Tom, dancing into his clothes, "and you know the battle of the seasons comes off to-day."

"Wasn't Mr. Rose a daisy to think of such a very jolly way to celebrate May-Day, and what is more, got the Doctor to agree to it?"

"He fetched him with the old Goths and Vandals," laughed Bert Cole. "Dr. Holcombe can't stand out against such authority as Ovid, Claus Magnus, or any of those pen-scratching old fossils. Anyway, I'm glad to get some fun out of the dry-as-dust ancients, for they have bothered our brains enough, dear knows."

The whole octave of lads was by this time wide awake, and their tongues ran faster than their fingers, as they buttoned buttons, and discussed the May frolic they were to have, in the woods just across the railroad track, and about a mile distant from Holcombe School. So engrossed were they in the momentous argument, as to who would be chosen May King, Chief Minister, Court Jester, and the rest of the royal train, that they hardly observed a freckled faced, red headed boy, who appeared in the dormitory, with a jug of fresh water, until a soft Irish voice, with a touch of brogue exclaimed, "Oh, young masthers, plaze be afther askin' the Docthor if I can go wid ye to the woods to-day and see the big battle! Sure, I love a fight betther than me dinner."

"No, indeed," cried Charlie Allen, the autocratic Tom. "I for one would like to have him." —"Of course you would, since I don't," sneered Charlie.

Part of the boys sided with Tom, and part with Charlie, and soon their voices rose so high as to attract the attention of Mr. Rose, the young master, who came in to inquire the cause of the dispute.

"I am very sorry, boys," he said gravely, "to see this feeling among you. On the common plane of school-life, the idea of 'caste' should not exist; but this case must, I think, be left to Dr. Holcombe to decide."

The breakfast gong sounded at that moment, and a bevy of lads ponred from the other dormitories, so of the school, "this is a party of gentlemen, and we don't want any Irish beggars with us."

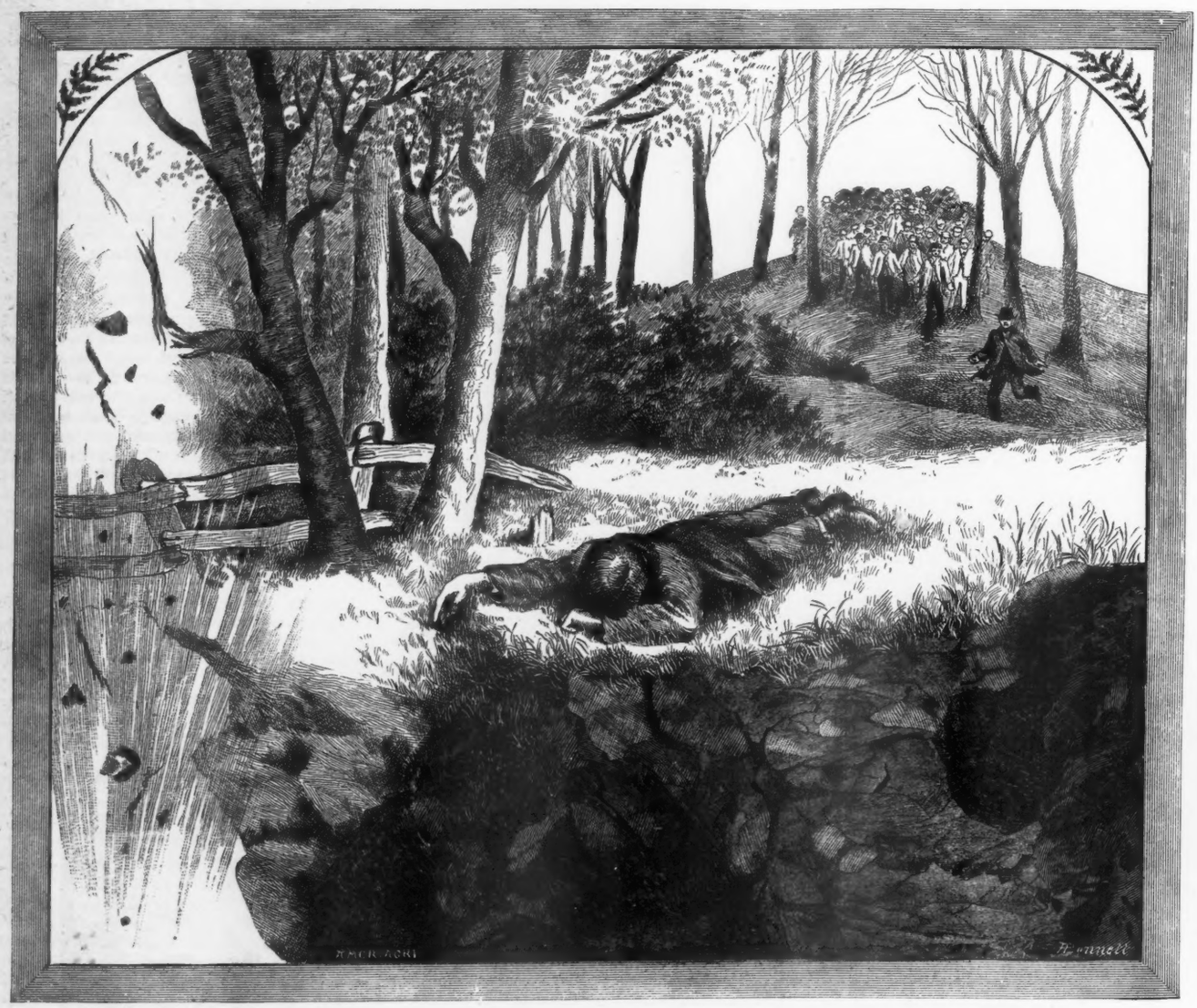
"I'm no beggar," said the boy, indignantly, "but an honest lad, workin' to get an education!" while Tom and one or two of the others exclaimed, "For shame, Charlie!"

"Anyway, you live down in Shanty Town, and we don't want you, or any of your kind," retorted Charlie; and as the little charity pupil withdrew, with brimming eyes and swelling heart, continued to his companions: "Because Dr. Holcombe lets Con come up here to school, and pay for it by his services, he needn't think he can associate with us as an equal and share our sports."

"But he is bright and respectable, and there would be no harm in his watching the fun or even taking part in it, that I can see," said more democratic Tom.

they were obliged to follow the train to the dining-room; and by the end of the meal every face had lost its cloud, when the head-master arose to address the school on the day's festivities.

"You are aware, young gentlemen," he said, "that we are to-day to revive a very old and time-honored ceremony, made famous by the Swedes and Goths, who in the sixteenth century, on the first day of May, always fought the battle of the seasons. One side was led by King Winter, the other by Captain Florio, the representative of Flora, the queen of summer and the goddess of the day. It is spoken of by Claus Magnus as 'the custom of driving away the winter and receiving summer.' I trust you may derive much pleasure from this ancient sport, but must beg you to remember that it is but a sham battle, hard missiles are strictly forbidden, and you



"DYNAMITE!" BURST FROM EVERY MOUTH. "AND CON, IS HE DEAD?"

Drawn and Engraved for the American Agriculturist.

must take heed, in your eagerness, to do each other no harm. The one who proves himself the bravest knight, shall at the end of the conflict be crowned King, and declared the champion of the school. I now dismiss you all to welcome in the May."

With loud cheers the boys rushed pell mell out into the playground, only Tom Carlton lingering behind, to whisper a word in the good doctor's ear.

The result was that when the party gathered to start for the 'merry green wood,' there was Con Dennis, with a beaming face, a huge rosette of ribbon on each shoulder, and bearing a basket filled with balls formed of daisies and dandelions, they being the ammunition for the great battle.

He kept close to the side of Tom, who said: "See here, fellows, the doctor says Con is to go with us, so I have dubbed him Jack-o'-the-Green, a character who used to figure in May-day games."

Hurrah for Jack-o'-the Green!" shouted most of the boys, good-naturedly; but Charlie Allen turned aside with an ugly scowl that portended no good to Con, or his defender.

"Carlton has done it on purpose to annoy me," he said to Bert Cole, "so sneaking to get round the doctor behind our backs! but I'll be even with him yet."

"Oh, I don't think there is anything mean about Tom," ventured Bert, but he knew it was unwise policy to say too much to Charley, who was very quick-tempered, while he and Tom were rivals in everything, from the Latin and Greek classes, to base ball and lawn tennis.

To-day, too, as the fates would have it, when the votes were cast, Charlie was elected King Winter, and Tom, Captain Florio. "I choose Bert Cole to be on my side," said Charlie. "And I, Con Dennis," at which the Irish lad stepped to Tom's side. "Arthur Bell." "David Johnson." "Ray Pellon," "Bob Benson." And so on until all the boys had been chosen, except the four smallest pupils, who were not allowed to take part in the fray, but who were merry as grigs, capering around on hobby-horses, and dressed in fantastic garb as Robin Hood, Little John, Will Stukely, and a roly-poly Friar Tuck.

It was a pretty, picturesque procession, that, with banners waving, marched gaily down the road, the followers of Winter wearing skins thrown across their shoulders, and fur caps on their heads, while they carried forked sticks, painted red, to represent fire, and scattered bits of ice right and left. In contrast, Captain Florio's troop appeared decked with leaves, snowdrops, violets, and other early flowers in their button-holes, and bearing green boughs, many of them rich with a wealth of blossoms.

People flocked to windows and doors to see them pass, and none were happier than light-hearted Con, bringing up the rear with his basket of floral bullets, and deaf to all sneers and inuendoes.

Part of the way lay along the railroad track, and here every boy broke ranks, and was soon trying to walk a rail.

"Hello! what's this?" exclaimed Bert Cole, suddenly stooping and picking up a small tin box that was lying on the track.

Let's see," said Charlie, taking it from him. "It is rather heavy, but I can't open it."

"Never mind, now," said Bert, the others have all gone ahead, and we must hurry after."

"I'll take it along, and we can peg at it with stones by and by, and see what is inside." So saying, Charlie slipped the box in his pocket, and both boys hastened after the others.

"Hurrah! Here is our Bunker Hill!" shouted Arthur Bell, running up a high green knoll, for it had been arranged that this was the field of battle, and whichever side succeeded in placing its standard three times on top of the mound, should be considered the victors.

The day was opened by Master Rose, in a short speech, in which he bade them all behave like brave and loyal knights, win their spurs by their valor, and perhaps thereby gain the throne, and be crowned King of the May, and champion of Holcombe school. He himself would be umpire, and bestow the prize.

With laughing jests, the boys ranged themselves on their respective sides, and as Mr. Rose clapped his hands, the battle of the May began, all making a rush for the green parapet. Overhead the birds twittered and sang, and the squirrels scampered off in affright, as the seasons met and battled royally for the mastery.

"Press where ye see my white plume shine!" cried Captain Florio, pointing to a snowy lily in his hat, and dashing bravely forward, while King Winter responded with a wave of his fiery wand, and the shout, "Strike for your snow-balls and your fires!"

How they wrestled and fought! catching this boy by the hair, tripping that one up, and rolling another down the slope, but all good naturedly, while the air was thick with the flying yellow and white flower balls, and the green branches and scarlet forks mingled in bewildering confusion.

It was the fourth round, and Con with a cheer had nearly succeeded in planting the Summer standard on the summit of the hill, when Arthur Bell, with a quick movement, dragged him from the spot, threw him to the ground, and followed it up with a rough kick, that brought a cry of pain from the boy's lips.

"See here, Art, that's not fair," said Tom, who was just behind.

"Anything is good enough for a Paddy," called Charlie, as he rushed by, "and you did just right, Art."

A withering glance was all Tom deigned him, as he stopped to help up his fallen comrade.

"If you are hurt, Con, you had better go to the rear."

"No, no," cried Jack-o'-the-Green, springing to his feet; "they are gaining on us, and sure we must drive them back!" and a moment later the umpire had scored another victory for Captain Florio.

"This decides it," said Mr. Rose, as after a rest and breathing spell of five minutes, the boys arose for the last round, for twice had the frost flag, and twice the blossom wreathed banner, floated from the Mountain of the May.

Every boy was on his mettle, eyes flashed and cheeks burned. Tom was urging on his band to more vigorous efforts, while Charlie was almost wild with excitement. In they dashed, disputing every inch of the way, and fighting soon with such real earnestness that Mr. Rose called constantly, "Gently, gently, boys, remember it is but play!"

"I must, I will win!" exclaimed Charlie, and just then came face to face with Captain Florio. He grasped his coat collar; but Tom jerked himself free, and rallying his forces made a sudden rush up the hill.

"Hurrah! hurrah! for summer," shouted Robin Hood and his merry men.

"He shan't, he shan't be king," thought Charlie, with a glance of hatred at his rival; and a branch just then striking him in the eyes, made him almost beside himself. Tom had nearly gained the summit; another moment and he would have planted his banner on the top, when Charlie drew from his pocket the tin box found on the track, and aimed it at his adversary's head. He knew it was unfair, that all hard missiles were forbidden, but he did not care; he was crazed with pain, jealousy and anger. He drew back his hand to fire, when suddenly through the crowd dashed a pale faced lad; there was the flash of a ruddy head, and Con had seized Charlie's arm and wrenched the box from his grasp.

"What do you mean, scoundrel?" cried King Winter, enraged beyond all bounds; "do you dare to interfere with me? take that!" but the boy had fled, and was now running with light, fleet steps towards an old, deserted quarry on the edge of the wood.

There was a pause in the conflict, and all stood watching the retreating figure. "Coward!" exclaimed Charley; but even as the word escaped his lips there was a loud explosion, earth and sky seemed coming together, and speechless with terror, each boy remained rooted to the spot. The battle was at an end, and "What was it?" "What was it?" passed from mouth to mouth.

Pale as death, Mr. Rose hurried in the direction of the report, those who were able following after, and just beyond a clump of trees they came upon Con, lying face downward on the edge of the quarry, while far beyond, among the rocks, thin wreathes of smoke floated up on the soft, spring air.

"Dynamite!" burst from every mouth. "And Con, is he dead?" asked Bert, with a look of horror.

"Only stunned by the concussion, I hope," said Mr. Rose, bending over the unconscious boy, and laying his hand on his heart. "Thank God, it still beats! but whoever brought that infernal machine here was tampering with a dangerous plaything."

Laid on the soft grass, restoratives gradually brought back color and consciousness to poor little Con, and with a great gasp he came back to life, and gazed up at the boys gathered round.

"Masther Tom, is he safe?" he asked, and as Captain Florio grasped his hand, "and Masther Allen? I would not have him hurt, for he didn't know what he was foolin' with."

It was very unlike the King Winter of the morning, who now came to Con's side, and—white and trembling as he realized the danger he had escaped—said with a sob: "I wish you would kick me, Con, or knock me down, or something." It was a boy's style of asking pardon, but Con understood, and granted full forgiveness when he said: "Sure I know you did not mane it all. 'Tis just a way ye have, Masther Allen."

"A way, though, that you would do well to change," said Mr. Rose, "and thank Heaven and our little Jack-o'-the-Green, Charlie, that you have been saved from murder, and all of us from a great peril."

"But, Con, how did you know what was in the box?" asked David Johnson.

"Faith, and does'nt me own feyther work on the railroad? He helps blast rocks in the new tunnel they're buildin' yonder, and I've seen the dynamite stuff in ivery form. Some of the men must have dropped that box this mornin' on their way to work, but its the lucky thing no train passed over it. I thought I should drop when I spied it, in Masther Allen's hand."

"Then you knew the danger of it?"

"Of course, and thinks I, if it goes off, the young gentlemen will all be killed. So I grabs the box, and without stoppin' to think, runs off and flings it as far as I can into the old quarry. Then up jumps the ground and knocks me on the head, and I know nothing more."

The boys laughed, but Mr. Rose said: "It was a brave deed, and almost a miracle that the box did not receive a blow and explode in Charlie's pocket."

"What a fortunate thing it is that Con came with us," remarked Bert.

"For which we must thank Tom," said Charlie, generously; and in silence the two leaders shook hands, and pledged a friendship that was never broken.

"Are'nt we going to have any king, or any feast?" asked little Friar Tuck, plaintively.

"Don't let me stop the fun," said Con, "for barrin' a buzzing in me head, I'm as spry as ever I was."

"There can be no doubt as to the most valiant knight," said Mr. Rose, "and I gladly proclaim Jack-o'-the-Green our King of the May."

"Hurrah! hurrah?" shouted all the boys, and Charlie and Tom cheered loudest of them all, while the former exclaimed, throwing his fur cap on the ground: "Summer has conquered winter, and King Con has conquered us all."

In spite of a headache, Con was the happiest monarch in the world when with the crown on his roseate locks he sat at the head of the rural feast, although his modesty would not allow him to issue a command. Tom was therefore appointed *Cadi*, or master of ceremonies, and kept the ball of fun rolling merrily.

The bountiful lunch prepared by Mrs. Holcombe was eaten with keen relish by the hungry boys, and then some jolly games of ball, archery, and Hare and Hounds, dignified by the name of Floralia or May games, made the afternoon speed by on flying feet; and when the setting sun gilded the May pole erected on the battle field, they wended their

way homeward, bearing Con in triumph to his little cottage under the hill.

Charlie, however, was not satisfied, and the next day he circulated a subscription paper throughout the school, headed by a generous sum. To this all gladly signed their names, and through the co-operation of grateful parents, so large an amount was raised, that very soon Con was installed as a regular member of Holcombe School. He proved a clever, apt pupil, and by the end of the year Charlie and Tom had to look to their laurels. His brogue disappeared, and in three years' time few would have recognized in the gentlemanly senior, the charity scholar and hero of the Battle of the May.

The Doctor's Talks.

COTTON AND LINEN.

I am asked how cotton and linen can be distinguished. This is a very easy matter if you have the

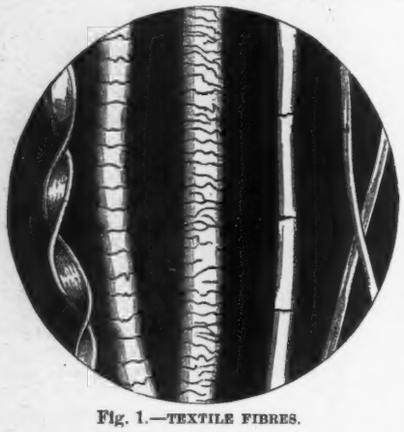


Fig. 1.—TEXTILE FIBRES.

American Agriculturist Compound Microscope. Cotton is not properly a fibre like linen, but is a long and slender hair which surrounds the seeds of the plant. This hair, when the cotton seeds are ripe, becomes flattened like a ribbon, and twisted as shown at the left hand of figure 1. It is this peculiar shape of the cotton hair that allows it to be twisted and spun into threads. All the materials used for spinning and making fabrics, have some peculiarity which allows them to be spun. A per-

Fig. 2.—THE LIQUORICE PLANT.

fectly smooth hair, like the human hair, can not be spun. The fibres of wool, of which two kinds are shown (of course greatly magnified), at the right of the cotton fibre, in figure 1, have their surfaces roughened in a manner which allows them to cling to one another, and be spun. The flax fibre shown next to the right, has numerous joints, which make it sufficiently rough to spin. The fibre at the extreme right, is that of silk. The silk fibre is exceedingly long, has in it a natural twist, which allows it to be readily spun. The various silk-weeds, or milk weeds, have their seeds surrounded by a tuft of beautiful silky hairs. Specimens are sent to us every year, asking if they can not be utilized. These hairs are perfectly smooth, and can not be spun, hence their only use is as a stuffing material.

WHAT IS LIQUORICE.

One youngster, who has chewed at the small sweet sticks that are sold at the drug stores, wishes to know what they are. Liquorice is a plant a native of the south of Europe, which has long, underground stems, improperly called roots, from which arise erect stems three or four feet high. A portion of one of these stems is shown in figure 2. In the very Far West there is a native species of liquorice which may answer the purpose of the imported "stick liquorice" to future youngsters. What is known as "ball liquorice," is made by boiling the sticks in water, and then evaporating the juice thus obtained, down to a thick paste, which is made into rolls.

An Interesting Scrap-Book

MRS. M. C. RANKIN.

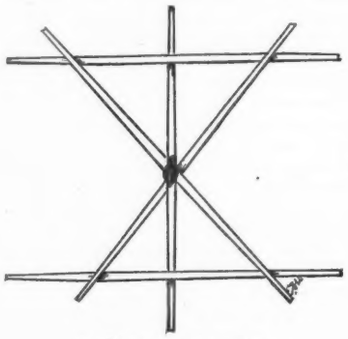
Almost all children and young people, like to make picture scrap-books; indeed, I have known many older persons, who seemed to share the enjoyment. My little friends, like most children in this age, are bountifully supplied with picture books, but, out of all the variety, if they were called upon to choose the ones they liked best, I am pretty sure they would say the scrap-books of home manufacture. They have watched the selection, cutting and pasting of the pictures, and have perhaps shared in the actual work, hence the books seem like old friends.

I am going to describe one of these books, as I have never seen another like it, and I think it may be new to you. The children call it their "doll-house," and this is the way they made it. Out of large sheets of unglazed white paper, they made a book which would open wide, so that two opposite pages appeared like one wide sheet. This was the doll-house, the first two pages of which they called the kitchen. In this they pasted a range, table, chairs, sink, pump, three doors, two windows, and a dresser covered with dishes, while the cook, with spoon in hand, stands by the range, where covered pots and kettles indicate that a meal is in preparation.

The next two pages are the dining-room, where a large table, covered with a cloth, is plentifully supplied with dishes and food, and the family are seated at dinner. Fruit, cake and pretty china, are visible on a side-board. In an open grate a fire blazes cheerily, while on the walls are appropriate pictures. Windows on two sides of the room, indicate that they have plenty of sunlight, while of the three doors, one, no doubt, opens into a china closet. The sitting-room comes next, and looks cosy and comfortable with its easy chairs and center-table, at which mamma sits mending stockings, while papa is busy with his newspaper. Two boys are playing a game, while a young lady is gracefully devoting herself to fancy-work. Then follow parlor, hall, and bed-room, each appropriately furnished; but the crowning room in the house, the children think, is the nursery. Here are children—enough for two or three families—playing with dolls, blocks, picture books, and other toys. In one corner two little girls are having a tea-party with miniature dishes, while in another part of the room, a boy is trying to make a kite. In the midst of this confusion, nurse is rocking the baby, while mamma is just coming through the door. The pictures on the nursery walls, are all such as would delight a child's heart, and altogether the room could hardly fail to be attractive to any child.

But where did they get all these pictures? They cut them from papers and magazines, many of them from the advertising columns, as in these days, almost everything that is sold is pictured out in some paper. Of course it took time to collect so great a variety, but the children always had their eyes open, and nothing escaped them. The book not only interested and entertained them for weeks while they were making it, but their individual tastes and ideas of proper arrangement were brought out and developed. They were led to notice what made rooms look home-like and attractive; they learned what furnishings were appropriate to different apartments, and their eyes were opened to much that was new and of benefit to them. No wonder that the "doll-house" is their favorite scrap-book.

The house might be greatly enlarged, so as to contain laundry, sewing-room, library, reception-room, etc. There might also be a yard, with garden and play-ground, and a barn, farm-yard, and chicken-house. But all of my bright young readers will see how this can be done, and I am sure you will find it a very pleasant variation of



BLOWING UP THE CZAR.

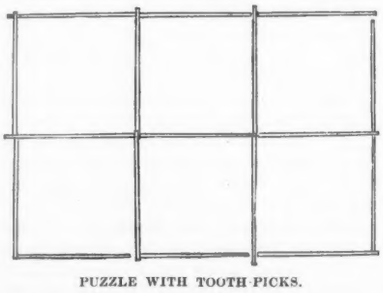
the ordinary scrap-book, in which pictures are pasted without order or method. If you do not care for it yourself, or have out-grown such enjoyments, you can still save the pictures, and arrange a book which will give many happy hours to some poor child in an asylum or a dreary home.

Blowing up the Czar.

This amusing little trick is performed with the aid of five wooden tooth-picks, a dried currant, and a match. The manner in which the tooth-picks are arranged, can be seen in the illustration. Lay the frame, formed by interlacing the tooth-picks, on a plate, and the currant on it for the Czar. Light one of the lower sticks, and watch the result. The "blowing up" will take place without the Czar as with him; he is added, we suppose, to afford some reason for the explosion.

A Puzzle with Tooth-Picks.

Form six squares with the seventeen tooth-picks as seen in the diagram. Now take away five of



PUZZLE WITH TOOTH-PICKS.

the tooth-picks, and leave the rest in three perfect squares. See if you can do it before we present the answer. Of course, spent matches, or any other small sticks will answer as well as tooth-picks.

Solution of Rebus in April Number of the *American Agriculturist*. To many wealth would only add evil, but few refrain from its pursuits.

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Rural Life of Thomas Jefferson AND His Services to American Agriculture.

JAMES PARTON.

Of all the men of whom I have acquired intimate knowledge, I should say that Thomas Jefferson, viewing his life as a whole, was the happiest. Besides possessing in abundance all the ordinary sources of well-being, such as admirable health, liberal fortune and a congenial home, he had at command all those delights which come from culture, knowledge, taste and art.

Music lent its charm to his existence. He came from a musical family. His sisters sang beautifully and he was himself a skillful player upon the violin. But I know not whether he derived from any of his pursuits pleasures more exquisite, more varied or longer sustained than from the cultivation of the soil. He was an enthusiastic farmer for sixty years, for even in his youth he took the lead in his native county in introducing new products and new methods of culture. One of his managers said of him: "I have rode over the plantation, I reckon, a thousand times with Mr. Jefferson, and when he was not talking he was nearly always humming some tune, or singing in a low tone to himself. And it was just so with his daughter, Mrs. Randolph. As she was attending to her duties about the house she seemed to be always in a happy mood. She had always her father's pleasant smile and was nearly always humming some tune. I have never seen her at all disturbed by any amount of care and trouble."

It was so with all the Jeffersons. People in that county used to speak of the "Jefferson temper" when they wished to convey the idea of uniform sunny good nature.

The estate of Monticello, Mr. Jefferson's favorite abode during most of his life, lies very near the geographical center of the State of Virginia, in the county of Albemarle, on a branch of the James River. He inherited a tract there of several thousand acres; and his father, being a surveyor, was a good judge of land. Much of this tract was of excellent quality, but the estate was too large for profitable working with the means and facilities then in existence. It was divided into four plantations, each with its own gang of negroes and its special overseer; but the estate as a whole never yielded anything near the profit which it was supposed to yield. It was, moreover, one of those estates which require at all times the presence and mind of the master. For forty years or more Mr. Jefferson was a public man, and of course absent from home part of the time on public service as Member of Congress, as Minister to France, as Cabinet Minister, Vice-President and President; and though he had usually an intelligent and competent steward, he seldom found the income of his estate sufficient to eke out the meagre salaries attached to his public stations.

He used to say, that of all the offices he ever held, the only one the salary of which was equal to the expenses incurred was the Vice-Presidency, which detained him from home only a portion of the year, and did not compel him to keep house nor give expensive entertainments. Every other office cost him more than he got from it.

The word Monticello is Italian for Little Mount. Two miles from Shadwell, his birth-place, there is the little mount to which he afterwards gave the name of Monticello; perhaps because a company of Italians had settled near by under the lead of Philip Mazzei, for the purpose of carrying on the culture of the grape on a large scale. Jefferson was constantly associated with Mazzei and his band of Italian gardeners, encouraging and assisting them in every way, and possibly it was from them he first heard the pretty word which he gave to his mountain.

When he was a student at law this mountain, shaped like a sugar-loaf, was covered to the very summit with the primeval forest. It is five hundred and eighty feet high, and contains about three hundred acres of land, the summit being almost a plain, about six acres in extent. According to the tradition of the neighborhood, young Jefferson and his future brother-in-law, Dabney Carr, had constructed near the summit, under an ancient oak of great size, a rustic seat, to which they would repair in the summer mornings, carrying their law books with them on their horses, and pass the whole day there in study and conversation. It was the time of sentimental friendships. They made a compact with one another that whichever of them died first should be buried by the other under the oak tree. And there, at this hour, their dust reposes. The little mount was chosen by Mr. Jefferson as the site of his new home, and the place shaded by the mighty oak was selected as the family burial place.

In the course of time the summit was cleared and leveled, but the trees on the rest of the mountain were carefully preserved during the whole of Mr. Jefferson's life. No manager cut or pruned a tree except by his orders. It was one of his constant and vivid pleasures to improve his mountain park, and make it more accessible. A winding road rendered the ascent tolerably easy, and the inmates of the house which he built there were lifted above the summer's heats, and, as Mr. Jefferson delighted to boast, above the tormenting ravages of the summer insects.

The farmers of to-day, who can sign a contract for the building of a house and then make the tour of Europe while the contractor is doing the work, can form little idea of what a task Mr. Jefferson undertook when he set about building his modest mansion upon the summit of Monticello. It proved to be a twenty-five years' job, counting the interruptions. At that time there was not an artistic edifice in the whole of North America. Strange to say, this Virginia planter, who had never seen a beautiful house of any kind, was an enthusiastic architect, and he was determined to build a house which an architect would approve. His bricks had to be made on his own estate and under his own direction. The timber was felled and hewn by his own slaves; the nails were wrought in his own little nailery, wherein for thirty years he kept from four to ten of his men making nails for the county. The wheel-barrows and wagons were made on the estate. When the house was getting ready for the sashes, he had to send to London for them, and a portion of the sashes were detained there a whole month to let the putty harden. Nearly all the furniture was made by his own slaves from drawings executed by himself. The plan of the lawns, shrubbery and gardens, as well as the paths through the woods, were all the result of his own knowledge and taste.

His marriage on New Year's day in 1772, when he was twenty-nine years of age, gave a powerful impulse to the improvements upon Monticello. This marriage, besides being fortunate in other respects, doubled his fortune, for the death of his wife's father in the following year brought her forty thousand acres of land and one hundred and thirty-five slaves. This estate was not unincumbered, but when the mortgages were all paid the residue was still large. One plantation on the James, called Elk Hill, was highly productive until the British troops ravaged and plundered it in the Revolutionary War. Another tract which his wife inherited, eighty miles from Monticello, included the Natural Bridge over Cedar Creek, which used to figure so advantageously in our school geographies. These additions to his property supplied abundant means for the improvement of Monticello during the few years that were to elapse before all peaceful pursuits were suspended by the war.

Jefferson was such a diligent recorder and minute diarizer that we can see him, in his letters and journals, as clearly as though we had stood by his side when he was out directing the improvements and building his house. He was a man that always had a rule in his pocket, and a case of mathematical instruments handy, bright with daily use. In his farm operations he took nothing for granted, but put everything to the test of calculation and experiment. We see him, watch in hand and pencil behind his ear, ascertaining which was the more economical vehicle, a barrow of one wheel or two wheels. He ascertained that the two-wheeled vehicle was the more advantageous. He recorded the performances of his wagons in going up the mountain, noting that a four-horse wagon made ten trips a day to the summit, and brought nearly five cords of wood in all. A coach and six, he puts down in his diary, "will turn in eighty feet."

So far as I know, we have never had among us such a persistent experimenter in new products. His Italian neighbors provided him with a great variety of seeds, nuts and cuttings from their native country, and we see in his journal that he tried them all upon his land, besides sending the surplus to his friends in Virginia, Maryland, and the more southern colonies. Among other things which he tried were almonds, bitter, soft-shell and hard-shell. He tried olives also, Italian and French chestnuts, strawberry-plants from the Alps, Italian melons, vines and grasses. He not only planted all these things, but watched their growth from day to day, and made minute and careful entries of the progress and result of each experiment. I need not say that most of them were failures. About one winter in every three in Virginia, they have weather for a few weeks which is more polar than temperate, and consequently most of these dainty things from Southern Europe, after surviving a winter or two, and giving promise of luxuriant growth, were nipped in a night by a temperature below zero.

He was far from being discouraged, however; for his diaries show us that he continued to the end of his life to be a resolute improver and untiring experimenter, both in gardening and in farming. One of his managers declared that, toward the close of his life, he had upon his Little Mount almost every tree and shrub in the world that would stand the climate of Virginia. If a tree of a certain kind perished in the winter he would plant anew in the spring. He was always trying something new in the way of nuts, shrubs, and grasses.

At the same time he looked well to his farms, both near and remote. He had a system of giving prizes to the overseers for the best crops, and, although these prizes were of trifling value, they carried with them a distinction which was worth much. The overseer that put into his barn the largest crop of wheat to the acre was rewarded with an extra barrel of flour, *i. e.*, a barrel over and above the annual allowance to his family. The best crop of tobacco brought to the overseer a new suit of Sunday clothes, and the best lot of pork an extra hundred and fifty pounds of bacon. Each slave also had rewards for good conduct.

The war of the Revolution sadly and long interrupted Mr. Jefferson's peaceful pursuits as planter and architect. The war found him a member of the Virginia Legislature, an established and useful member, though his voice was seldom heard in debate. The war made him first a member of the Continental Congress, then Governor of Virginia, and both offices called him from home frequently and for long periods.

A pleasing episode of the contest was the coming of the Hessian prisoners to the neighborhood of Monticello, after the surrender of Burgoyne. The kindly Germans cultivated fields, laid out gardens, and the whole region round their barracks was soon smiling with flowers and young vegetables. Governor Jefferson was much among them, supplied them with seeds and roots, gave concerts at his house to the officers and was frequently a guest in their camp. These Hessians, as the Governor remarked, appeared to the visitor more like a settlement of industrious farmers than a camp of soldiers. Mrs. Jefferson and the other Virginia ladies were a little scandalized at the free and easy ways of Ma-

dame Von Riedesel, wife of the Hessian General, who rode about the country on horseback astride, and took the Virginia fences with the boldness of a fox hunter.

Later in the war, when Cornwallis ravaged the best portions of Virginia, Governor Jefferson's estate on the James, a hundred miles below Monticello, was all but ruined. Cornwallis, who lived for ten days in his home at Elk Hill, chose to regard the Governor's private estate as public property, not unmindful, perhaps, that Governor Jefferson was the author of the Declaration of Independence. Not content with burning all the barns on the estate, filled with last year's crops, he took the trouble to destroy all the growing crops of corn and tobacco, took all the cattle, pigs and sheep for army use, appropriated all the horses, killed the colts, burned the fences and carried off twenty-seven slaves. I have alluded to Jefferson's habit of minutely recording all events. On this occasion he entered with his usual particularity the items of his loss: "Nine horses, fifty-nine cattle, thirty sheep, sixty hogs, seven hundred and eighty barrels of corn, nineteen hogsheads of tobacco, and two hundred and seventy-five acres of growing grain." He mentions that Cornwallis treated the rest of the plantations in much the same style, "but not with that spirit of total extermination with which he seemed to rage over my possessions."

General Tarleton, whose troopers occupied Monticello for a few hours, behaved much better. He gave orders that nothing in the house should be injured or removed, and these orders were obeyed, except that some of the soldiers found their way to the wine-cellar and helped themselves to some of the Governor's wine. To complete the story of his mishaps as a farmer, I should mention that the extensive and flourishing vineyards planted by the Italians near Monticello were trampled out of existence by the movements of so many armed men during the war. The ruin was so complete that they had not courage or the capital to renew the attempt.

After the return of peace the services of all able men were required in adjusting the country to the new conditions, and thus for many a year Jefferson was little more than a visitor to his own home. He was able, however, to render signal and lasting service to American agriculture when he was farthest away from his native soil. When he was Minister to France he made an extensive tour in the southern parts of Europe, observing closely and recording minutely methods of culture, the systems of land tenure, the agricultural implements, the habits of the people and their condition in the various provinces. To use his own language, he "ferreted out the people in their hovels, looked into their kettles, ate their bread, and lolled on their beds to find if they were soft." He was moved to extreme compassion by his observations. The people in France, he thought, were "ground to powder," not by the bad disposition of their rulers, but by the erroneous system of government under which they lived. He never used such strong language in his life as when he was describing the misery of the French peasantry.

"Of twenty millions of people supposed to be in France," he once wrote, "I am of opinion that there are nineteen millions more wretched, more accursed in every circumstance of human existence, than the most conspicuously wretched individual of the whole United States!"

He often returned to this subject, and wrote of it in the same spirit. He urged his friend La Fayette to make a similar tour, and to see with his own eyes the condition of his countrymen. I cannot doubt that the burning words of Jefferson had their effect upon the subsequent course of La Fayette in the impending French Revolution.

He sent home from this tour a great many nuts, plants and seeds to friends in Virginia, with the minutest possible directions as to the culture of the different crops. The caper plant he was anxious to introduce, and many others; but he was especially interested in producing the olive and the best kind of Piedmont rice. He sent over hundreds, and even thousands, of young olive trees, besides some parcels of acorns of the cork oak, and succeeded in procuring a small quantity of the best rice seed for introduction into South Carolina.

He traveled a hundred miles to inspect a rice-cleaning machine of which he had heard great things, but found, upon examining it, that it was the same one that had been in use for many years in South Carolina. He had infinite difficulty in procuring some of the Piedmont rice unhulled, the best in the world, the seed of which it was unlawful to export. After buying some sacks of the seed, and making secret arrangements to have it forwarded to America, he was still a little fearful of failure, and filled all his pockets with the precious seed, which he carried away with him. It proved a wise precaution, for his sacks never reached him. He divided the little seed he carried in his pockets among his friends in the rice district of South Carolina; to each thirty or forty grains, urging upon all the importance of personally watching the growth of the new species. In a few years the Piedmont rice was domesticated in South Carolina, and as the seed proved congenial to it, the rice grown in that State was accounted the best in the world.

During the eight years of his presidency he utilized his office on several occasions for the benefit of the farming interest, particularly in the introduction of valuable breeds of domestic animals. It cost a great deal of astute and patient diplomacy to procure, with the assistance of Mr. Livingston, the American Minister at Paris, a half a dozen Merino sheep, and get them safely across the ocean. Mr. Edmund Bacon, of Kentucky, who was manager at Monticello for twenty years, gave an amusing account of his going to get these wonderful sheep, accompanied by Mr. Madison's manager, who was to have half of them. Neither of the men had ever seen specimens of the renowned Merino, and naturally expected them to be large, handsome animals.

"But," Mr. Bacon used to say, "the sheep were little bits of things, and Groves said he would not give his riding-whip for the whole lot."

Mr. Jefferson had given instructions that when they came to divide the six sheep, they should toss up for the first choice, which was done, and the best buck fell to Mr. Jefferson.

"He was a little fellow," Captain Bacon would say, "but his wool was almost as fine as cotton. When I got home, I put a notice in the paper that persons who wished to improve their stock could send us two ewes, and we would keep them until the lambs were old enough to wean, and then give the owners the choice of the lambs, and they leave the other lamb and both of the ewes. We got the greatest lot of sheep, more than we wanted, two or three hundred I think, and in a few years we had an immense flock. People came long distances to buy our full-blooded sheep. At first we sold them for fifty dollars, but they soon fell to thirty and twenty, and before I left Mr. Jefferson, Merino sheep were so numerous that they sold about as cheap as common sheep."

In a similar way the President imported broad-tailed sheep from the Barbary States, animals noted for their mutton. On another occasion, President Jefferson, Mr. Madison, Secretary of State, and General Dearborn, Secretary of War, joined in importing six hogs from Calcutta, black and white, short-legged, long-bodied, easily fattened, and especially not given to rooting. This importation was very successful also, and very beneficial.

"Mr. Jefferson," as his manager once said, "didn't care about making money from his imported stock. His great object was to get it widely scattered over the country, and he left all these arrangements to me."

For the amusement of the children, of whom there was always a great crowd on the Little Mount (his daughter Martha being herself the mother of eleven), he even took pains while President to improve his breeds of Guinea-pigs, and sent a pair from Washington for this purpose in 1807.

Space fails to give an account of all his endeavors of this kind. On retiring from the presidency in 1809, he enjoyed the full benefit of his improvements, and spent the remainder of his life a Virginia farmer. Being the master of nearly a hundred slaves, and cultivating chiefly crops of grain, living also, two days' ride from Richmond, the nearest large town, he was obliged to carry on a great variety of industries. I have already alluded to his nail factory, in which, after his retirement, he sometimes employed as many as ten hands, each of whom cleared two dollars a day. His own Embargo cut off his supply of nail rods and closed his little factory for some years. He also had a considerable factory for making cotton cloth, bringing his cotton from Richmond up the James in barges. He made all the cotton cloth for his household of a hundred and twenty people, besides selling a large quantity to the country stores. He also had a good blacksmith's shop, and one of his slaves enjoyed the reputation of being the best workman in wood in that part of Virginia. This man made a good deal of the mahogany furniture for Monticello, did much of the fine work on the family coach, and when Mr. Jefferson was building the University of Virginia, he was greatly aided by the taste and ingenuity of this slave. Another of his men was a skillful house painter and glazier. He had at one time a small whiskey distillery, and he probably made as good cider as was ever produced from apples. He used to say that two defective apples in ten bushels would noticeably affect the flavor of the cider.

Perhaps the most important service he rendered his own neighborhood was in building and maintaining a flour mill on the Rivanna near his house. During his presidency he rebuilt the mill and made a new dam. In connection with this important structure, Captain Bacon related a curious anecdote, showing the calm temper of Mr. Jefferson. The mill had cost a great deal of money, as well as a great deal of time, contrivance and anxiety. Soon after its completion a woful catastrophe occurred.

"We had," said Captain Bacon, "about eleven thousand bushels of wheat in the mill, and coopers and everything else employed. There was a big freshet—the first after the dam was finished. It was raining powerfully. I got up early in the morning, and went up to the dam. While I stood there, it began to break, and I stood and saw the freshet sweep it all away. I never felt worse. I did not know what we should do. I went up to see Mr. Jefferson. He had just come from breakfast. 'Well, sir,' said he, 'have you heard from the river?' I said, 'Yes, sir; I have just come from there with very bad news. The mill-dam is all swept away.' 'Well, sir,' said he, just as calm and quiet as though nothing had happened, 'we can't make a new dam this summer, but we will get Lewis' ferry-boat, with our own, and get the hands from all the quarters, and boat in rock enough in place of the dam, to answer for the present and next summer. I will send to Baltimore and get shipbolts, and we will make a dam that the freshet can't wash away.' He then went on and explained to me in detail just how he would have the dam built. We repaired the dam as he suggested, and the next summer we made a new dam that I reckon must be there yet."

Such was the rural life of Thomas Jefferson, a man who added a dignity and charm to an occupation which I believe to be the most dignified and the most interesting of all the employments of man, the cultivation of the soil. He was fortunate in having the assistance of intelligent and affectionate laborers, who held him in reverence, and to whom he was more like a father than master. Slavery as it existed at Monticello presented to the casual visitor its most pleasing aspect; but being a thing essentially and incurably evil, it had even there its ugly features and its dire effects. He extracted from it all the good it was capable of yielding, and happily passed away from this sublunary scene before it ended in the wide-spread disaster which he had foretold forty years before, and of which he warned his countrymen in language so impressive that it remains part of the history of the institution—one long to be remembered.

SEE PAGES 225, 226 and 227 FOR MATTERS OF UNUSUAL INTEREST.

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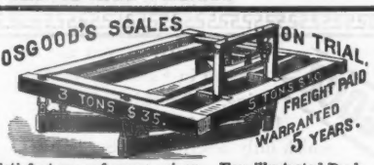

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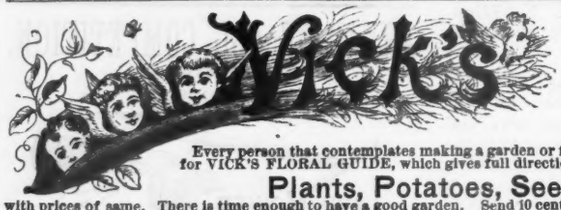

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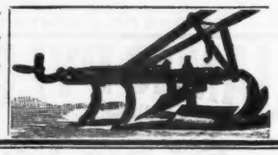

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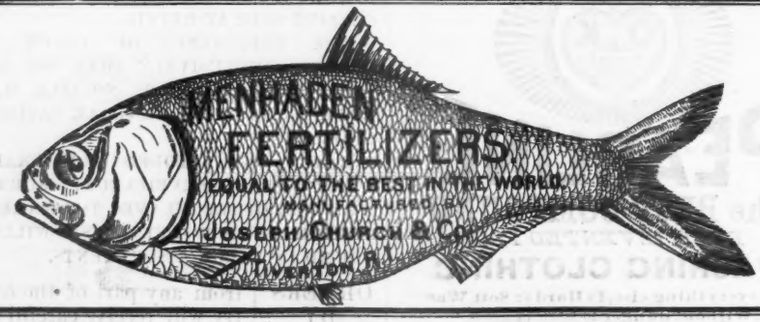

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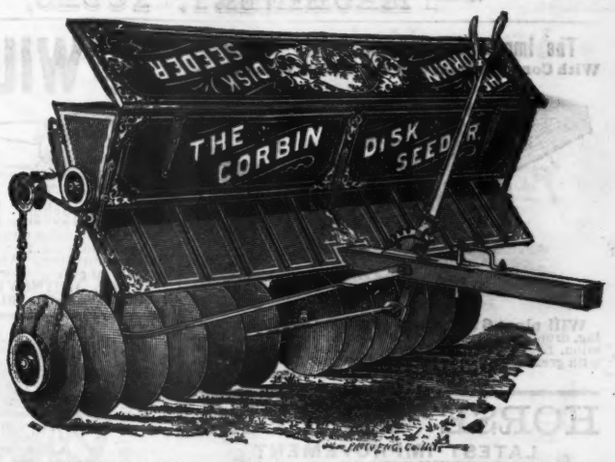

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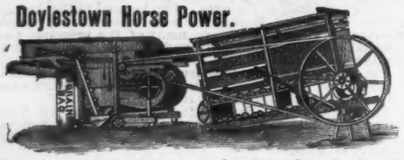

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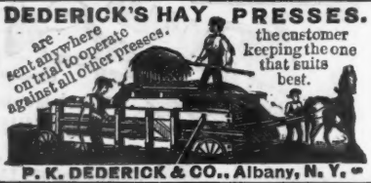

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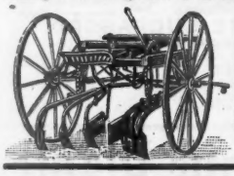

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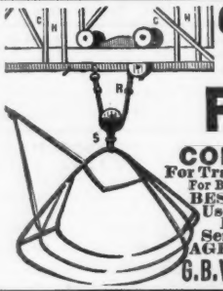

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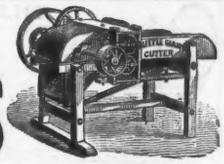

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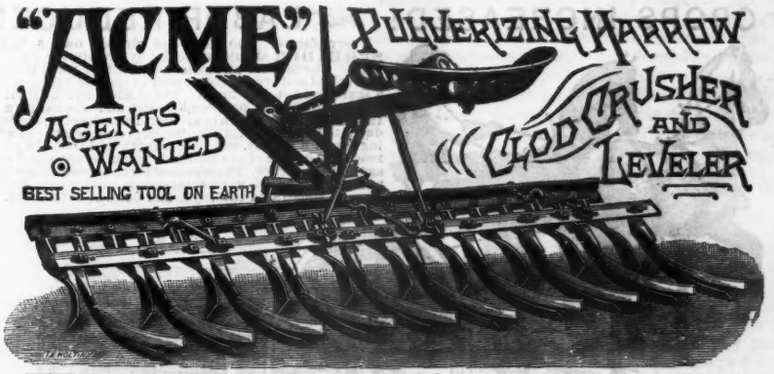

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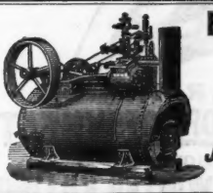

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J. A. FIELD & CO., St. Louis, Mo.

EMPIRE CITY GRINDING MILL.
GRINDS
Ear Corn, Feed and Table Meal, Tobacco Stalks and Stems, Shells, Plaster, etc.
SEND FOR CIRCULAR.
A. RICKARD 110 John Street, NEW YORK.

TEN LBS LIFTS ONE TON. **BENNETT'S IMPROVED STUMP PULLER**
Received Centennial Medal.
Is now in use in Canada and nearly every part of the U. S. **LIFTS 20 TO 50 TONS.** Hands on rollers, worked by two men. Prices, $25 to $70. Circulars free. Manufactured by H. L. BENNETT, Westerville, Franklin Co., O.

MACHINERY, TOOLS, AND FARM IMPLEMENTS.

CROPS INCREASED! LABOR REDUCED!

Every farmer who does not already own a **KEMP SPREADER** should immediately investigate its advantages. The manure pile goes much further when it is finely pulverized and evenly distributed so that each plant will get a share and not too much. The KEMP SPREADER does this better than is possible by hand, and discharges a load **inside of two minutes.** Our four-wheel Spreader reduces the draft one-third by the improved manner of attaching forward wheels, and for Strength and Durability it has reached a degree of perfection in manufacture where breakage seldom occurs. Thousands of these Spreaders are in use, and we can furnish good reference in every State. Send for illustrated catalogue and book of references.

KEMP & BURPEE MANUFACTURING CO., Syracuse, N. Y.

BRICK AND TILE MACHINERY

AND CLAY CRUSHERS. BEST IN THE WORLD

Address J. W. PENFIELD & SON, Willoughby, O. P. O. Box 2.

TILE & BRICK MACHINERY.

Beats the WORLD.

STONE-SEPARATING CLAY-CRUSHERS

Illustrated Catalogue free.

H. BREWER & CO., No. 153 Mill St., TECUMSEH, MICH.

Satisfaction Guaranteed.

HOOSIER AUGER TILE MILL.

Mills on hard. Prompt delivery.

FOR PRICES AND CIRCULARS, ADDRESS

NOLAN, MADDEN & CO. Rushville, Ind.

BEST IS ALWAYS CHEAPEST. EMPIRE WELL AUGER CO., ITHACA, N. Y., U.S.A.

WELL DRILL.

For ARTESIAN and COMMON WELLS.

Thousands in use with records of 100 ft. per day in clay, 50 ft. in slate, and 10 to 20 ft. in Hard rock. They work successfully where others fail, and we challenge any machine to test with us. Make wells at one-third less expense than any other, and drill 3 ft. to their 2 ft. Sold ON TRIAL, *without* advanced payment. Send for descriptive Catalogue.

GET CATALOGUE. Remember Old Reliable

EMPIRE WELL AUGER CO., ITHACA, N. Y.

CIDER MACHINERY Send for our New 1885 CATALOGUE mailed FREE. Boomer & Boschert Press Co. Syracuse, N.Y.

CHAMPION

Before you by a Windmill or take the Agency for one investigate the merits of the **CHAMPION VANELESS.** Always gives satisfaction. Twenty years' experience in the manufacture of Pumps, Boats, etc. Send for Catalogue.

R. J. DOUGLAS & CO., (Successors to Powell & Douglas), Waukegan, Ill., P. O. Box 214

Before You Buy

A WIND MILL, LAND MEASURER, WIRE STRETCHER, PLOW SHOES, COMBINATION TOOLS, Etc., Etc.

Write for Prices and Find New List to

D. H. BAUSMAN,

Agents Wanted. LANCASTER, PA.

HOW TO RAISE LARGE CROPS OF WHEAT

HOW TO PREVENT WINTER KILLING

Send your name and address, and we will mail you our **Illustrated Pamphlet** of 28 pages **FREE.**

THE SEED DRILL REGULATOR CO.

LEMONT, CENTRE CO., PA.

Mention this paper.

IT WILL PAY YOU

If you run a Mower or Reaper, to purchase a BOSS Sickle Grinder.

It will pay you if you want to handle a reliable Sickle Grinder and one that is sold at reasonable prices, to handle the BOSS. More Boss Sickle Grinders are sold every year than all others made.

Send for Price List and Catalogue. Agents wanted where we have none.

R. J. DOUGLAS & CO., (Successors to Powell & Douglas,) Waukegan, Illinois. P. O. Box 223. Manufacturers of Pumps, Windmill, etc.

MY AGENTS ARE MAKING

$5, $10, $15, $20, $25 and $30 Per Day

Selling **LEWIS'S Combination HAND FORCE PUMPS.** It makes 3 complete machines. I have agents all over the U. S. who are making $10 to $25 per day selling these pumps. I give their name and address in catalogue. *To introduce it I will send a sample pump, express paid to any express station in the U. S. for* $5.50. Made of brass; will throw water from 50 to 60 ft., and retails for only $6.00. Indispensable for spraying fruit trees. The Potato Bug attachment is a wonderful invention. They sell rapidly. Agents wanted everywhere. Send at once for ill'd catalogue, price-list and terms. Address **P. C. LEWIS, Catskill, N. Y.**

I-X-L WIND MILL

–12,000– IN USE

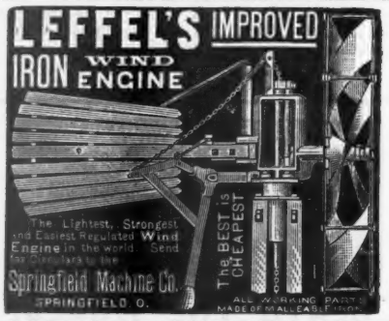
Has no equal for simplicity, durability, and power.

Reliable Agents wanted in all unassigned territory.

Pumps, Tanks, and Wind Mill Supplies of every description. Farm and Suburban Water Works a specialty. Illustrated Catalogue and Price-List free.

The Phelps & Bigelow W. M. Co., Kalamazoo, Mich., and 1215 West 9th Street, Kansas City, Mo.

LEFFEL'S IMPROVED IRON WIND ENGINE



The Lightest, Strongest and Easiest Regulated Wind Engine in the world. Send for Circulars to the Springfield Machine Co. SPRINGFIELD, O.

The BEST is CHEAPEST

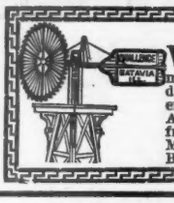
ALL WORKING PARTS MADE OF MALLEABLE IRON

THE PERKINS. Wind Mill

is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address

The Perkins' Wind Mill & Ax Co., Agents wanted. **Mishawaka, Ind.**

CHALLENGE



WIND MILLS never blow down, a record no other mill can show. Sent on 30 days' trial. Also feed grinders, shellers, pumps, etc. Agents wanted. Catalogues free. CHALLENGE WIND MILL AND FEED MILL CO., Batavia, Kane Co., Ill.

THE SCIENTIFIC FARMER'S FORGE COMBINATION ANVIL AND VISE BLACKSMITH DRILL, —AND— KIT OF TOOLS.

Made especially by us for Farmers. Guaranteed the Cheapest and Best. Time and Money Saved by using them. Send for Catalogue, prices, etc.

THE FOOS MFG. CO., Springfield, O.

AGENTS WANTED. TRADE DISCOUNTS LARGE

BULL DOG WRENCH PAT. DEC. 29-85

FOR NUTS 2 INCHES OR LESS.

SAMPLE MAILED FREE ON RECEIPT OF 25 cts IN POSTAGE STAMPS.

THE A. FRENCH SPRING CO. LIM. PITTSBURG, PA.

WALTERS' PATENT Galvanized Shingles.

Tobe used where the Pitch of the Roof is equal to that necessary in using the ordinary Shingle.

Make the handsomest, absolutely storm, wind and fire-proof roof. We guarantee satisfaction or no pay. Send for particulars to

THE NATIONAL SHEET METAL ROOFING CO.

518 & 520 East 20th St. New York.

Look Out for:

The Advertiser who has a good clerical position to offer, but wants you to make "a deposit of fifty dollars or more as a guaranty of your reliability."

The Lightning-rod Agent who agrees to encase a farm building with lightning-rods for five dollars, and subsequently presents a bill for one hundred and five dollars—one hundred dollars for the rods, and five dollars for putting them up.

The party who sells rights for a worthless patent process for curing tobacco.

Worthless recipes for curing hog cholera and other animal diseases.

Swindlers who claim royalties on some patented article which they may find in a farmer's possession.

Quack Traveling Dentists who advertise to furnish a set of teeth fully as good as the best for a very small sum of money.

Organizers of Stock Companies who have just a few more shares left, and are willing to let you in "on the ground floor."

The "Experienced Responsible Lawyer," who says he "stands high in his profession," has a record of winning "ninety per cent of his cases," and will do your lawing for you on shares.

The Railroad Scalpers who very frequently palm off worthless tickets as genuine upon the unsuspecting.

The Sharpers who are advertising Australian and Russian oats, which are no better than the so-called Bohemian oats.

Always Bear this in Mind.

Regular, reliable first-class physicians do not advertise themselves. It is against the rules of the regular medical profession to do this. Our readers may almost invariably therefore set down the doctor who "advertises" his cases, as a charlatan and quack, and both he and his medicines are to be shunned as small-pox, or any other contagious disease. If our readers will always bear this in mind, they will save a good many dollars, and escape physical maladies worse than they are already suffering from. When anything is the matter with you physically, always consult a regular practicing physician; if possible, some person with whom you are acquainted.

Such a "Friend" to Me.

Mr. J. F. Humphrey, Sedgwick Co., Kans., has received a circular letter from New York, in which the writer says he is a "friend," and proposes a scheme for shoving the queer. Hundreds of our subscribers are receiving the same circular letter. Mr. Humphrey adds in his communication to us, "the party has evidently made a mistake in trying to be such a friend to me, for I am not friendly to a business that is not 'exactly legitimate.' Please use the letter to the best advantage for rooting out the crime of counterfeiting."

"Life-Sized Portraits."

Our subscribers who are forwarding us circulars received by them from this vicinity, offering to furnish "life-sized portraits free of charge," providing they pay for the frames, are referred to the exposure of these "liberal promoters of fine art," made in the Humbug Columns of the March *American Agriculturist*.

"The Missing Sermon."

Into the waste basket—that is the place for the "Missing Sermon, or a "Letter of Warning and Advice to Parents," which the "Lover of Souls," or the "Silent Missionary," as he signs himself, is sending to our subscribers at Friendship, Md., and elsewhere. The "Silent Missionary" closes his published appeal, which of course calls for the purchase of something, in this wise: "Life is short, and as age is creeping over me I feel obliged to call upon you, and all desiring to do good, to give me a helping hand, so I may accomplish the desired end, to wit., the salvation of bodies and souls." Life can not be one minute too short for this "Silent Missionary," and other similar pious frauds who desire to "save bodies and souls" in the manner indicated in this circular; indeed, it would be a good thing for the community at large if they were immediately to proceed to—that bourne from whence no pious fraud returns.

A California Fraud.

The housekeepers in San Francisco are not a little indignant over the discovery that a large amount of milk sold in that city is, it is alleged, made from a mixture of nitrate of potash, glycerine, and other chemicals. The spurious so closely resembles the genuine article, that it is readily taken for it, and an analysis is necessary to discover the fraud, though of course the spurious article affords little or no nutriment. It is reported that one of the parties who has been instrumental in palming off this bogus milk on the Pacific Slope, has come East to introduce the same in Chicago and elsewhere.

Forty-four Questions, More or Less.

It is now the latest dodge of medical quacks who impose upon the credulity of the unsuspecting, to advertise their nostrums under the head of some so-called company. Perhaps the charlatan's name does not appear at all, but the so-called "Company" is spread all over his circulars, pamphlets, etc. A subscriber sends us a circular letter, which he has received from one of these "Companies," which cures all diseases mankind is heir to, and forwards medicines "prepared with the greatest care for each case, securely packed in a plain box." But before the medicine is forwarded, the patient is asked to answer the following, among a great variety of other questions propounded in the circular letter:

What is your age? (Just as if ladies generally were going to answer that question!)
Is your partner healthy?
Have you worked hard?
From what do you suffer most?
How is your sight?
What is your height?
What is your weight?
Is your tongue coated, and if so what color?
Are your brothers and sisters healthy?
Do you ever have dizzy, faint, or blind spells?
Is your hearing good?

After being bombarded with these and forty-four other similar questions, the unfortunate who may receive this circular letter, is finally plumply asked to tell the "Company" this, to wit: "Do you feel discouraged, gloomy, and melancholy at times?" If after running his eye down the long list of diseases of numerous kinds enumerated in this circular letter, the recipient don't feel "discouraged, gloomy and melancholy," he must have a pretty good constitution and is not easily discomposed.

The Patent Medicine Craze.

Only those who have been in the drug business can be aware of the extent of the patent medicine craze. The writer has known persons who were always taking some kind of nostrum, and recommending it to others. When a new one came out—if it promised to be a sufficiently universal cure, it was adopted and the old one abandoned, and this continued year after year, with one nostrum after another. These persons were not among the ignorant; for we have in mind an eminent judge, one whose opinions on all other matters were of the soundest, to be infatuated upon medical matters, and who constantly took the latest nostrum. We recollect a lady, the childless wife of a wealthy man, who was foremost in every charitable work, whose life was devoted to "going about and doing good," who had this mania to such a degree, that she would visit the drug stores in search of new remedies, just as other ladies visit the dry-good stores in search of new styles in dress goods. This good lady was constantly taking some nostrum and buying it to give to poor people. How do we account for this? It is very simple. These universal remedies; these "restorers," and the whole host of "invigorators," are merely stimulants. They are made up of well known tonics, especially Peruvian bark, or its active principle, quinine. Besides, they contain more or less alcohol, and are not essentially different from that seductive mixture, known to frequenters of the bar as "cock-tail." Those who take these medicines regularly, indulge in a regular tipple. A dose (like a dram), stimulates them; they feel better for a time; when the effect of this passes away, they take another dose, and thus, persons who believe themselves totally abstinent and who would not for any consideration take spirituous liquors, under the guise of some medical nostrum indulge in a habitual tippling.

Medical Fashions.

Only those who keep the run of such matters, are aware that there are fashions in diseases and their alleged remedies, as well as in dresses, hats, etc. Just now the fashionable disease for which the quacks prescribes, is in short, "Nervous Debility," or "Nervous Prostration." We can not say more about the circulars sent out by the makers of these medicines, than that they show a marked ability to make well persons think that they are ill, or if ill, to make them think that the only relief is in the particular quack who puts forth the particular circular, which happens to fall into their hands.

Cautionary Signals.

"A Grand Biblical Contest."

A merchant in Jamestown, N. Y., sends us a circular which has been sent to the young people of his vicinity, very generally. He says: "Possibly they may fulfill their promises, but it looks too thin to be a yard wide and all wool."

WHAT ARE THE PROMISES?

A firm of dealers in jewelry in Philadelphia, not having as much business as they wish, propose to increase their "already large list of customers," to "get up a boom," as it were, by means of a "Grand Biblical Contest," open to all. This grand B. C. is thus described: "The question is as follows: 'Where is the word Lord first mentioned in the Bible?' The first correct answer received, takes as a prize 'A Solid Gold Hunting Case Watch,' valued at sixty-two dollars. The second answer gets 'A Solitaire Diamond Ring,' valued at forty-five dollars," and so on, diminishing in value down to one dollar, to the number of one hundred prizes.

THE LOSERS WIN.

In a "Biblical Contest," unlike other contests, those who do not win prizes are paid for trying. We read: "Also to each contestant, no matter whether they receive a prize or not [we hope the jewelry is better than the grammar], we intend presenting free, a set of six Heavily Plated Collar and Cuff Buttons, with New Patent Lever Attachment, * * * the same that we retail at fifty cents a set."

NOT UNCONDITIONAL.

The circular says: "Each person in sending their [more grammar!] answer must inclose twenty cents (postal note preferred), to pay postage in sending premiums," etc. Those familiar with cheap jewelry are aware that twenty cents (postal note if possible) will go a good ways in buying it, and that a set of Collar and Cuff Buttons which are retailed at fifty cents, may be sold for twenty cents and yet pay a profit.

We look upon this as an ill-advised scheme, which need not be fraudulent to be pernicious. The use of the Bible in such a manner is in very bad taste, to say the least. A contest which is decided by the order, in time, in which the answer is received is quite too much like a lottery, a game of chance.

About Florida.—In answer to inquiries, we would repeat that we have not lost faith in Florida, although the severe frost of last January, and the recent fraudulent operations of land speculators, may have checked immigration in that direction. But no one should decide upon settling in Florida without being thoroughly advised as to the soil, climate and advantages of different localities, and especially the one chosen. The best course is to make personal investigation, and carefully select a suitable location, before becoming a Floridian. If orange growing be the object, it will be wise to not only secure a favorable situation, but to count the cost of the land and necessary outfit (house and other improvements, including the planting of a grove), as well as the expense of living until the business shall prove remunerative. Some settlers, after planting an orange grove, rely chiefly upon growing small fruits and vegetables for means to support their families for a few years. Though many natives live cheaply, depending largely upon fish and game, a Northern family will find living more or less expensive, and should not venture to settle in the "Land of Flowers" without sufficient ready money or the means to secure a maintenance.

While refusing to advertise the various Florida land schemes concocted during the past two years, we have always recommended those writing us to correspond with the Florida Land and Improvement Company, a reliable organization, with headquarters in Jacksonville, Florida. Colonel McClure, Editor of the Philadelphia "Times," who is now in Florida, writes to his paper a very glowing description of some of these lands, which are offered at one dollar and a half per acre and upwards, and which Colonel McClure says "are the most productive and intrinsically valuable lands of Florida."

Our Farmer Presidents.

THOMAS JEFFERSON.

We present with this May issue the first of the series of Engravings of the Homes of Farmer Presidents, viz.: Monticello the Home of President Thomas Jefferson. James Parton, the American historian, contributes a six column paper of surpassing interest regarding the rural life of Jefferson and his services to American agriculture. This special engraving and special description will be greatly prized by all our readers, and we are confident that their friends and neighbors will wish to become subscribers upon learning that these special features are to be furnished without extra cost.

Furthermore, every subscriber who sends us ten cents to cover cost of mailing, will receive one of the Engravings printed on extra heavy paper, specially adapted for framing, securely packed and forwarded in a heavy tube specially made for the purpose. These engravings thus mounted will make most beautiful ornaments for the walls of prince or peasant's home. They are richly worth $5.00, and are presented to no person except subscribers.

Subscribers sending for this Engraving of Monticello, mounted as described, will be served in the order in which their letters are received. Large numbers have written in advance of its appearance.

For Sixty Days More.

Our offer of the valuable and useful articles described in our Premium list, will be open until July 1st. With no money, and but little effort, any of these articles can be secured, and thousands who have already received them, have given testimony as to the ease with which they have obtained the requisite subscriptions to the *American Agriculturist*, and the satisfaction they have derived from the possession of the Premiums.

Homes for Home-Builders.

So many of our subscribers desire to have this elegant work again offered as a Premium, we renew the offer made in the March *American Agriculturist*, to wit.: We will present this volume as a Premium to any person who shall send us a new subscription to the *American Agriculturist*, English or German, at the regular rate of $1.50 per year, and ten cents extra for posting the volume if sent by mail. This offer will be open for thirty days. For full description of this volume see page 187, April *American Agriculturist*, or page 80 of the February issue.

From May 1886 to May 1887.

As every number of the *American Agriculturist* is complete in itself, subscriptions can commence at any time. For example, new subscribers can begin with this May issue, and have their subscriptions continue until May next year, twelve months. All such subscribers will be entitled to the Special Engravings and Special Descriptions of Our Farmer Presidents, as they appear with the various issues of the *American Agriculturist* during that time.

SPECIAL OFFER REPEATED.

A Most Useful and Valuable Volume.

For One Subscription to the American Agriculturist.

THE NEW AMERICAN DICTIONARY.

In this most useful work of **600 pages,** a Pronouncing Dictionary of upward of 50,000 words is given in the first 300 pages, and in the remaining 300 pages, eighty-four subjects are treated, abounding in information of interest and of constant value for reference, including **forty-five pages of engravings,** illustrating Animals, Birds, Fishes, Plants, Implements, etc., etc. The volume is well gotten up, attractively bound, and will be a treasure in any family receiving it.

OUR OFFER.

The above described "New American Dictionary," will be **presented, and sent post-paid,** to any person who, within thirty days, sends us **one subscriber** (or his own subscription), to the *American Agriculturist*, English or German, for 1886, at the regular rate of $1.50 a year. No other Premiums, of course, included, except Engravings of our Farmer Presidents.

Every Subscriber Should Have This.

THE AMERICAN AGRICULTURIST NEW SIMPLE MICROSCOPE.

We have supplied many thousands of our readers with this microscope, and multitudes have given unsolicited testimonials to its value, and have informed us of the delight experienced by all the members of the household in using this beautiful little instrument. Dr. George R. Cutter, well known as the translator and editor of Prof. Frey's great work on the "Microscope and Microscopical Technology," says: "I have used this microscope for dissecting and preparing specimens, and find it equal to some imported ones costing from fifty to seventy-five francs (that is, from $10 to $15) in Paris."

A full description of this beautiful and valuable little instrument will be sent post-paid to those requesting it.

OUR OFFER.

First, We will present one of these microscopes, delivered free, and the *American Agriculturist*, to any subscriber, post-paid, during all of 1886, for two dollars.

Second, We will present this microscope to any present subscriber, and deliver it free to him, who will send us two subscribers to the *American Agriculturist* for one year, at one dollar and fifty cents each. No other Premiums, of course, included.

Take Notice, All Subscribers.—Any person already a subscriber to the *American Agriculturist*, can have one of these Microscopes delivered for One Dollar and Twenty-five cents.

Bound Volumes of the American Agriculturist.

We have to say to new subscribers this year, to carefully preserve each issue of the *American Agriculturist*, as tens of thousands of others have done before you; you will undoubtedly wish to bind your volumes at the end of the year. We can supply bound copies of the *American Agriculturist* for 1885 and for the previous fifteen years at $2.00 per volume. 30 cents added for postage when sent by mail.

Contributors to this May Number.

James Parton.
Dr. George Thurber.
A. S. Fuller.
M. C. Weld.
Joseph Harris.
Seth Green.
L. S. Hardin.
Gen. Geo. W. Wingate.
Col. J. P. Battersby.
James Webb.
E. E. Rexford.
John Gould.
Isaac H. Fickel.
C. G. Kleinstueck.
John Jeanin, Jr.
G. H. Hopkins.
Albert J. Thompson.
Judge Wm. A. Wood.
David W. Judd.
Dr. F. M. Hexamer.
Henry Stewart.
Chester P. Dewey.
D. D. T. Moore.
L. C. Root.
John M. Stahl.
P. H. Jacobs.
Theodore Goodrich.
Mrs. Olive Wright.
Mark W. Johnson.
Josiah Hoopes.
Miss Agnes C. Sage.
Mrs. Lucy R. Fleming.
Mrs. E. S. Welsh.
Mrs. Eva M. Niles.
Mrs. M. C. Rankin.
Mrs. Mary Stuart Smith.

Prize Essays on Plaster.—The essays upon Plaster were received in due time, and submitted to Col. D. D. T. Moore, and Mr. M. C. Weld, to award the prizes offered. These gentlemen, after careful perusal, award to Mr. Isaac H. Fickel, of West Hayden, Ohio, the first prize, of fifty dollars, and to Mr. L. F. Abbott, Lewiston, Maine, the second prize, of twenty-five dollars. Their report was confirmed, and the first prize essay is published in this number. It is valuable as giving concisely the rationale of the action of this valuable fertilizer, and the second-prize essay, which is more thoroughly practical in its character, will follow hereafter.

Testing Seeds.—The Ohio Agricultural Experiment Station at Columbus, which last season tested about sixty so-called varieties of corn, offers to test such field seeds—notably corn, wheat, clover, timothy, etc.—as may be sent to it this spring in proper condition for the purpose. Circulars containing full particulars as to what is required in sending seeds, may be obtained by addressing Experiment Station, Columbus, Ohio.

A Substitute for Corn.—R. A. Whitney, Marshall Co., Minn., writes in answer to R. McCrel's inquiry for a substitute for corn as a food for fattening stock: "Use ground barley and oats; this is used extensively here, as corn cannot be successfully grown. For young stock and horses, use one-third barley to two-thirds of oats. For fattening, use barley alone or one-third oats." Barley is an excellent food for horses, but has much less husk than oats, and should be mixed with cut clover hay moistened.

Flax Grown for Seed.—The breadth of land in flax for seed has been increasing largely of late years in those Western States where a deep, rich soil makes it possible to raise good crops without manure. The crop is sensitive to dry weather, hence should be in as early as the ground can be prepared. When raised for the fibre it is not an exhausting crop, but raised for seed it makes heavy drafts upon the soil for alkali and phosphoric acid, hence the ground should be manured with ashes and bone dust, or their equivalent, in order to maintain its fertility. The more thoroughly the soil is worked, so as to get it mellow and in fine tilth, the better.

The Wagons of the World.

I.—Primitive Vehicles.

Our purpose is to give, in a series of illustrated articles, a synoptical history of the principal wheel vehicles used since the introduction of such modes of conveyance by the ancient Egyptians. In doing this we shall indulge in as little circumlocution as possible, the object being to present, from the most trustworthy authorities, only such information as will prove interesting and instructive to the general reader. Hence we proceed directly to the discussion of our subject, with no attempt at fine writing, relying more upon the matter submitted than the manner of its presentation.

As Bible students are aware, the earliest allusion to wheel carriages is in the Book of Genesis, where Pharaoh commands his prime minister, saying "Take you wagons [chariots?] out of the land of Egypt, for your little ones and for your wives, and come." Since this record was made, more than thirty-five centuries have passed away, during which wagons and carriages under a multitude of forms have been inaugurated and made of important service to man, for both business and pleasure. And during the centuries which have elapsed since their introduction, these conveyances have served as thermometers in recording the rise and fall of civilization. Though horseback riding was one of

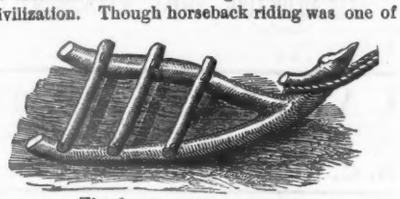


Fig. 1.—PRIMITIVE SLEDGE.

the earliest modes of travel, we may fairly suppose that the first means of locomotion entitled to the name of a carriage, was in the form of a sledge. This rude mode of conveyance (the sledge, see fig. 1), after having undergone numerous modifications, is still used in various countries. In Europe, sledge is the name applied to a low kind of cart, but in America the word has been abbreviated to a sled, or changed to a sleigh, which in either case involves the idea that a sliding vehicle is meant. In the rural districts, the farmer employs a machine of similar construction, called a stone-boat, or stone-sledge. It is usually made of plank, the flat under surface of which is generally forced over the ground by ox-power. Its chief advantage is in being more easily loaded with large and heavy stone than any other conveyance.

This primitive invention, at first rude and imperfect, was the iniatatory step in the art of carriage building, since improved upon so wonderfully. Afterward it required but little inventive genius to discover that, by placing this sledge upon

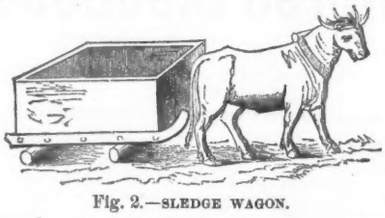


Fig. 2.—SLEDGE WAGON.

rollers, much of the difficulty originally encountered in its use would be obviated, and an increased weight moved by the same force with more ease. Hence a great improvement was made by exchanging the rubbing motion of the sledge for the rolling motion of a cylinder; and whether this discovery was accidental, or the studied invention of some early mechanic, is now of little consequence. But something answering the purpose of wheels was soon added to the sledge. On the walls of a temple at Luxor, in Thebes, is seen an early representation of the sledge, showing the germs of this improvement. Over the title of "Primitive Sledge Wagon" (fig. 2), a reduced copy is here given. It exhibits a sledge elevated upon two logs, constituting what may appropriately be called an inceptive sledge-wagon. These logs were undoubtedly suggestive of the common axle since in use. The original mechanic needed only three logs to the superincumbent structure, shape the ends into journals, fitted to a hub, when everything, for a practical use, would be complete. Timber for the axle-tree was already at hand; so was the material for wheels. Probably these wheels were at first nothing more than what are now designated as "pauc-wheels," (originally so called, because in a side view they resembled the head of a drum), cut

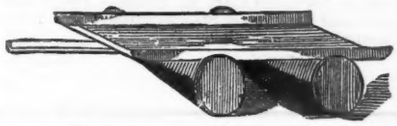


Fig. 3.—ARISTOTLE'S SYCTACLE.

transversely from the tree, and having a hole made in the center for an axle-tree, such as are still applied to the carts of semi-civilized people in these progressive times.

Aristotle's Syctacle (fig. 3), is another form of this improvement—the use of rollers. Although the mechanic of modern times agrees with him, yet it has been claimed by Aristotle, that the syctacle has many advantages over carts with axles and wheels, arguing that an axis impedes the progress of wheel vehicles by pressure on the hub. As an example of early theoretical science, this idea has some interest taken in connection with our rubject.—In our next article we shall have somewhat to say about conveyances on real wheels.

President Jefferson's Home.

The beautiful engraving of Monticello, which accompanies this number, is pronounced by those who have seen it as one of the finest works of art ever presented to American readers. Our subscribers, and **none others are presented** with it, will understand, that by **sending ten cents to cover the cost of mailing, each one of them is entitled to this superb picture, mounted on heavy paper, and forwarded post-paid in a tube specially prepared for the purpose.** Of course, printed on heavy paper, the illustrations show to still better advantage, and the whole effect of the group is most pleasing. Mr. James Parton, the American Historian, in his most interesting paper elsewhere, describes Monticello at length. Far up the mountain, upon a broad plateau, appears the residence; the centre top picture presents a front view, and at the left is seen a rear view. What is known as Jefferson's mill at the right centre, was built upon the Rivanna River, which runs along the base of Monticello, and runs through the adjacent hills. This picturesque old mill was at one time owned by Thomas Jefferson.

Just within the gate leading to the residenceis the granite tomb of Jefferson (originally before its defacement eight feet in hight), and with this inscription: "Here lies buried Thomas Jefferson; Author of the Declaration of American Independence, of the Statute of Virginia for religious freedom, and father of the University of Virginia. This tablet very many years ago was removed to the mansion for fear that relic hunters might carry it away. Moore's Creek is a very picturesque stream, which one fords passing from the village of Charlotteville to Monticello. A fine view of the latter is obtained from this stream. Carter's Mount is on an adjacent range to Monticello, divided from the latter by a wooded ravine. Fuller details of this group of pictures accompany the engraving, which is printed on heavier paper and forwarded in a tube to subscribers on receipt of 10 cents for mailing.

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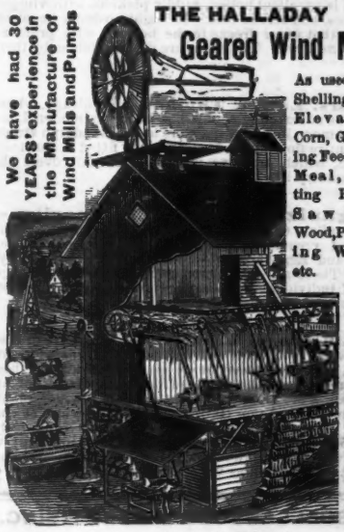

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Mr. S. M. Pettengill has sold the good will of the Newspaper Advertising Agency, doing business in this city under style of S. M. Pettengill & Co., to Mr. James H. Bates, so long his enterprising partner. In announcing this change Mr. Pettengill says: "I cannot close my business connection with the press of more than thirty-seven years' duration without heartily thanking you for your uniform confidence, kindness and courtesy, which you have ever shown me, which shall be a cherished memory as long as life shall last." Mr. Bates, who is a gentleman of great energy, continues the business at 41 Park Row.

Carp.—P. Thorson, Winneshiek Co., Iowa. The carp is thought by many to be a good table fish, but it is not very good in the presence of such fishes as striped bass, black bass, shad, perch, pickerel, and others we might name, to say nothing of trout, salmon, and many of the sea-fishes with which our sea-coast markets are usually well supplied. It will compare favorably with the Buffalo-fish and cat-fish among fresh water, and with cod and haddock among salt water fishes. It is an excellent food fish, may be made palatable by good cooking, and is excellent boiled, mildly pickled with vinegar and spices, and served cold. It might no doubt be raised in ponds that never freeze to the bottom, with profit as far north as Iowa. The sexes are distinguished by their form.

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Certificates of Value.—Last March we alluded to the worthlessness of many of the certificates which are printed of medical nostrums, etc. While many of these certificates are valueless, there are very many that are valuable. For example, Messrs. Nash & Brother, manufacturers of the Acme Harrow, publish a pamphlet containing thousands of reliable testimonials from forty-eight States and Territories; they furthermore write us that they have ten thousand more in their possession, which they have not as yet published.

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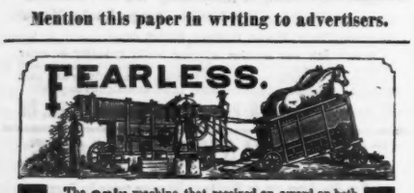

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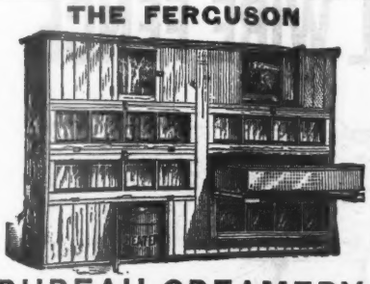

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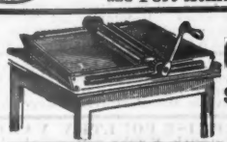

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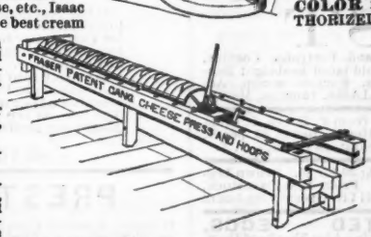

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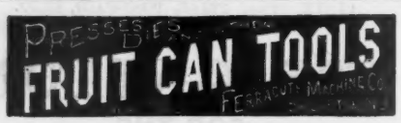

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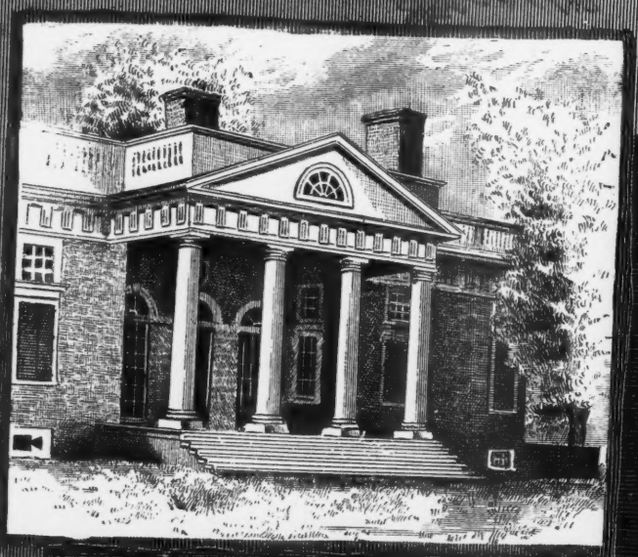

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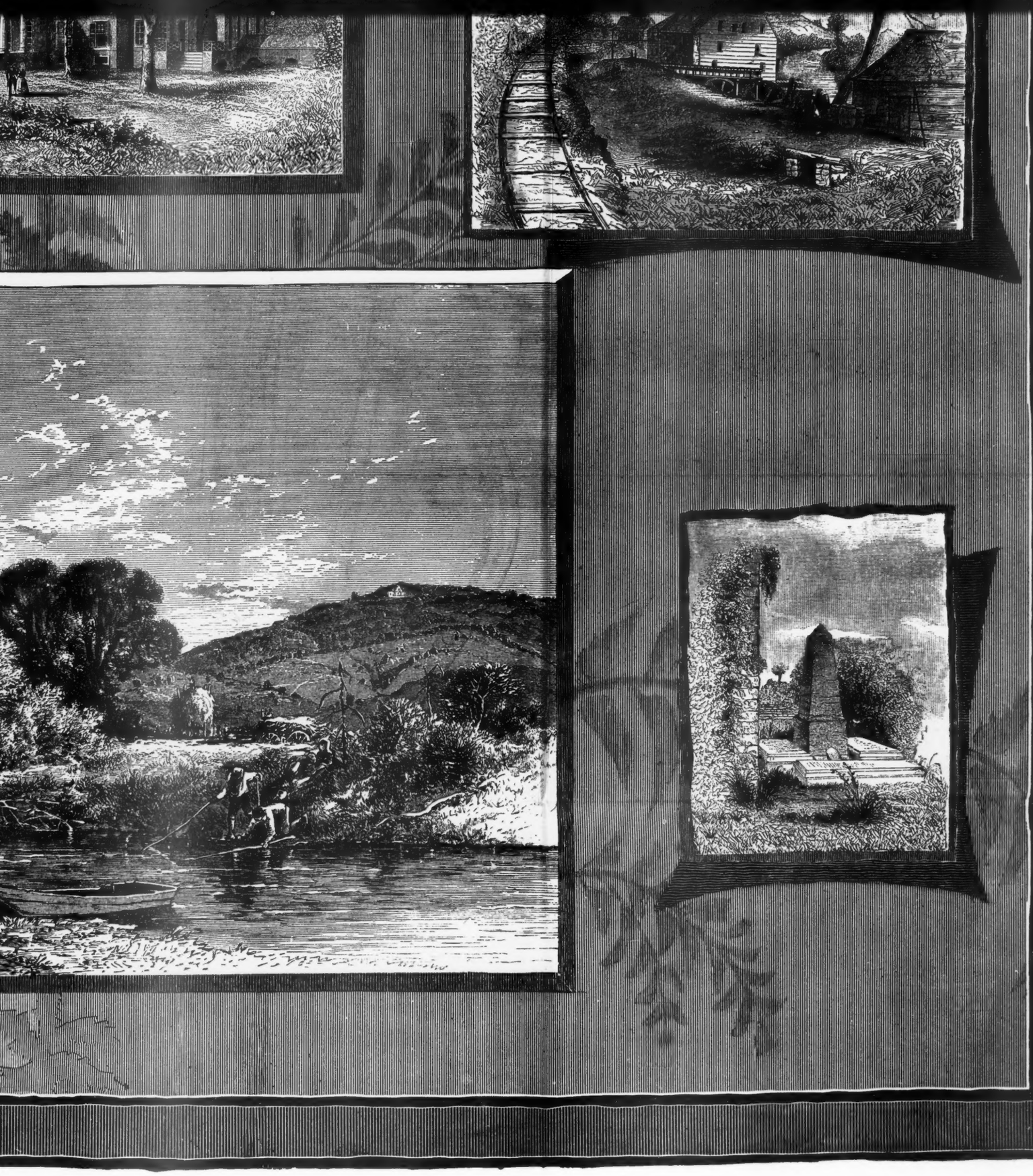

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